



Engraved by J. S. Hall, New York.

H. H. Corliss

REPORT
OF THE
Twenty-First Annual Meeting
OF THE
American
Street Railway Association

HELD AT
LIGHT GUARD ARMORY, DETROIT, MICH.
OCTOBER 8-10, 1902

H. H. VREELAND
President Interurban Street Railway Co., New York
PRESIDENT

Association Organized December 13, 1882

1902-1903

OFFICE OF THE ASSOCIATION
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OFFICERS, 1902-1903.

PRESIDENT:

JERE C. HUTCHINS,

President Detroit United Railway,
DETROIT, MICH.

FIRST VICE-PRESIDENT:

W. CARYL ELY,

President International Railway Co.,
BUFFALO, N. Y.

SECOND VICE-PRESIDENT:

W. KELSEY SCHOEPP,

President Cincinnati Traction Co.,
CINCINNATI, O.

THIRD VICE-PRESIDENT:

P. S. ARKWRIGHT,

President Georgia Railway and Electric Co.,
ATLANTA, GA.

SECRETARY AND TREASURER:

T. C. PENINGTON,

Treasurer Chicago City Railway Co.,
CHICAGO, ILL.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS AND

HERBERT H. VREELAND, President Interurban Street Railway Co.,
New York, N. Y.

RICHARD T. LAFFIN, General Manager Worcester Consolidated
Street Railway Co., Worcester, Mass.

ANDREW RADEL, Vice-President Middlesex and Somerset Trac-
tion Co., Bridgeport, Conn.

WALTER P. READ, Vice-President Consolidated Railway and
Power Co., Salt Lake City, Utah.

WILLARD J. HIELD, General Manager Twin City Rapid Tran-
sit Co., Minneapolis, Minn.

PLACE OF MEETING TO BE SELECTED BY THE
EXECUTIVE COMMITTEE.

OFFICERS, ORGANIZATION.

CHAIRMAN:

MOODY MERRILL,

President, Highland Street Railway Company, Boston, Mass.

SECRETARIES:

CHAUNCEY C. WOODWORTH,

Secretary, Rochester City and Brighton Railroad Company, Rochester, N. Y.

CHARLES B. CLEGG,

President, Oakwood and Dayton Street Railway Companies, Dayton, O.

PLACE OF MEETING, BOSTON, MASS.

OFFICERS SINCE ORGANIZATION.

OFFICERS, 1882-'83.

PRESIDENT:

H. H. LITTELL,

General Manager, Louisville City Railway Company, Louisville, Ky.

FIRST VICE-PRESIDENT:

WILLIAM H. HAZZARD,

President, Brooklyn City Railroad Company, Brooklyn, N. Y.

THIRD VICE-PRESIDENT:

GEORGE B. KERPER,

President, Mount Adams and Eden Park Inclined Railway, Cincinnati, O.

SECOND VICE-PRESIDENT:

CALVIN A. RICHARDS,

President, Metropolitan Railroad Company, Boston, Mass.

SECRETARY AND TREASURER:

WILLIAM J. RICHARDSON,

Secretary, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS and
JULIUS S. WALSH, Pres., Citizens' Railway Co., St. Louis, Mo.
CHARLES CLEMINSHAW, Vice-Pres., Troy and Lansingburgh Railroad Co., Troy, N. Y.
THOMAS LOWRY, Pres., Minneapolis Street Railway Co., Minneapolis, Minn.
JAMES K. LAKE, Supt., Chicago West Division Railway, Chicago, Ill.
DANIEL F. LONGSTREET, Gen. Man., Union Railroad Co., Providence, R. I.

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OFFICERS, 1883-'84.

PRESIDENT:

WILLIAM H. HAZZARD,

President, Brooklyn City Railroad Company, Brooklyn, N. Y.

FIRST VICE-PRESIDENT:

JAMES K. LAKE,

Superintendent, Chicago West Division Railway, Chicago, Ill.

THIRD VICE-PRESIDENT:

DANIEL F. LONGSTREET,

General Manager, Union Railroad Co., Providence, R. I.

SECOND VICE-PRESIDENT:

GEORGE B. KERPER,

President, Mt. Adams and Eden Park Inclined Railway, Cincinnati, O.

SECRETARY AND TREASURER:

WILLIAM J. RICHARDSON,

Secretary, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS and
H. H. LITTELL, Gen. Man., Louisville City Railway Co., Louisville, Ky.
JOHN G. HOLMES, Pres., Citizens' Street Railroad Co., Pittsburgh, Pa.
JULIUS E. RUGG, Supt., Highland Street Railroad, Boston, Mass.
PIERRE C. MAFFITT, Pres., Missouri Railroad Co., St. Louis, Mo.
JACOB SHARP, Pres., Twenty-third Street Railway Co., New York, N. Y.

PLACE OF MEETING, NEW YORK, N. Y.

OFFICERS, 1884-'85.

PRESIDENT:

CALVIN A. RICHARDS,

President, Metropolitan Railroad Company, Boston, Mass.

FIRST VICE-PRESIDENT:

JULIUS S. WALSH,

President, Citizens' Railway Company, St. Louis, Mo.

THIRD VICE-PRESIDENT:

EDWARD LUSHER,

Sec. and Treas., Montreal City Passenger Railway Company, Montreal, Can.

SECOND VICE-PRESIDENT:

HENRY M. WATSON,

President, Buffalo Street Railroad Company, Buffalo, N. Y.

SECRETARY AND TREASURER:

WILLIAM J. RICHARDSON,

Secretary, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS and

WILLIAM H. HAZZARD, Pres., Brooklyn City Railroad Co., Brooklyn, N. Y.

JAMES K. LAKE, Supt., Chicago West Division Railway, Chicago, Ill.

CHARLES J. HARRAH, Pres., People's Passenger Railway Co., Philadelphia, Pa.

WILLIAM WHITE, Pres., Dry Dock, E. Broadway & B. Railroad Co., New York, N. Y.

B. DU PONT, Pres., Central Passenger Railroad Co., Louisville, Ky.

PLACE OF MEETING, ST. LOUIS, MO.

OFFICERS, 1885-'86.

PRESIDENT:

JULIUS S. WALSH,

President, Citizens' Railway Company, St. Louis, Mo.

FIRST VICE-PRESIDENT:

WILLIAM WHITE,

President, Dry Dock, E. Broadway & B. Railroad Company, New York, N. Y.

SECOND VICE-PRESIDENT:

CHARLES B. HOLMES,

President, Chicago City Railway Company, Chicago, Ill.

THIRD VICE-PRESIDENT:

SAMUEL LITTLE,

Treasurer, Highland Street Railway Company, Boston, Mass.

SECRETARY AND TREASURER:

WILLIAM J. RICHARDSON,

Secretary, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS and

CALVIN A. RICHARDS, Pres., Metropolitan Railroad Co., Boston, Mass.

JOHN KILGOUR, Pres., Cincinnati Street Railway Co., Cincinnati, O.

JOHN MAGUIRE, Pres., City Railroad Co., Mobile, Ala.

THOMAS W. ACKLEY, Pres., 13th and 15th Streets Pass. Railway Co., Philadelphia, Pa.

CHAUNCEY C. WOODWORTH, Sec., Rochester City & B. Railroad Co., Rochester, N. Y.

PLACE OF MEETING, CINCINNATI, O.

OFFICERS, 1886-'87.

PRESIDENT:

THOMAS W. ACKLEY,

President, 13th and 15th Streets Passenger Railway Company, Philadelphia, Pa.

FIRST VICE-PRESIDENT:

ALBERT G. CLARK,

Vice-President, Cincinnati Street Railway Company, Cincinnati, O.

SECOND VICE-PRESIDENT:

WILLIAM H. SINCLAIR,

President, Galveston City Railroad Company, Galveston, Tex.

THIRD VICE-PRESIDENT:

PRENTISS CUMMINGS,

President, Cambridge Railroad Company, Cambridge, Mass.

SECRETARY AND TREASURER:

WILLIAM J. RICHARDSON,

Secretary, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS and

JULIUS S. WALSH, Pres., Citizens' Railway Co., St. Louis, Mo.

HENRY HURT, Pres., Washington and Georgetown Railroad Co., Washington, D. C.

C. DENSMORE WYMAN, Vice-Pres., Central Park, N. & E. River Railroad Co., N. Y.

A. EVERETT, Pres., East Cleveland Railroad Co., Cleveland, O.

SAMUEL S. SPAULDING, Pres., East Side Street Railroad Co., Buffalo, N. Y.

PLACE OF MEETING, PHILADELPHIA, PA.

OFFICERS, 1887-'88.

PRESIDENT:

CHARLES B. HOLMES,

President, Chicago City Railway Company, Chicago, Ill.

FIRST VICE-PRESIDENT:

JULIUS E. RUGG,

General Superintendent, Boston Consolidated Street Railway, Boston, Mass.

THIRD VICE-PRESIDENT:

CHARLES B. CLEGG,

Director, Dayton Street Railroad Company, Dayton, O.

SECOND VICE-PRESIDENT:

R. DUDLEY FRAYSER,

President, Memphis City Railway Company, Memphis, Tenn.

SECRETARY AND TREASURER:

WILLIAM J. RICHARDSON,

Secretary, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

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THOMAS W. ACKLEY, Pres., 13th and 15th Streets Pass. Railway Co., Philadelphia, Pa.

WINFIELD SMITH, Pres., Cream City Railroad Co., Milwaukee, Wis.

DANIEL F. LEWIS, Pres., Brooklyn City Railroad Co., Brooklyn, N. Y.

CHARLES GREEN, Pres., People's Railway Co., St. Louis, Mo.

EDWARD G. MOSHER, Supt., Augusta and Summerville Railroad, Augusta, Ga.

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PRESIDENT:

GEORGE B. KERPER,

President, Mount Adams and Eden Park Inclined Railway, Cincinnati, O.

FIRST VICE-PRESIDENT:

JESSE METCALF,

President, Union Railroad Company, Providence, R. I.

THIRD VICE-PRESIDENT:

WILLIAM H. MARTIN,

Vice-President, Ferries and Cliff House Railway Company, San Francisco, Cal.

SECOND VICE-PRESIDENT:

HENRY HURT,

President, Washington and Georgetown Railroad Company, Washington, D. C.

SECRETARY AND TREASURER:

WILLIAM J. RICHARDSON,

Secretary, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS and

CHARLES B. HOLMES, Pres., Chicago City Railway Co., Chicago, Ill.

JOHN SCULLIN, Pres., Union Depot Railroad Co., St. Louis, Mo.

JAMES H. JOHNSTON, Pres., City and Suburban Railway Co., Savannah, Ga.

HENRY A. SAGE, Pres., Easton, S. Easton & W. E. Pass. Railway Co., Easton, Pa.

EDWARD J. LAWLESS, Supt., Metropolitan Street Railway, Kansas City, Mo.

PLACE OF MEETING, MINNEAPOLIS, MINN.

OFFICERS, 1889-'90.

PRESIDENT:

THOMAS LOWRY,

President, Minneapolis, and St. Paul, Street Railway Companies, Minneapolis, Minn.

FIRST VICE-PRESIDENT:

C. DENSMORE WYMAN,

Vice-President, Central Park, North and East River Railroad Company, New York, N. Y.

THIRD VICE-PRESIDENT:

ROBERT McCULLOCH,

General Manager, Citizens', St. Louis, Cass Avenue & Fair Grounds, and Benton-Bellefontaine Railways, St. Louis, Mo.

SECOND VICE-PRESIDENT:

JOHN C. SHAFFER,

President, Citizens' Street Railroad Company, Indianapolis, Ind.

SECRETARY AND TREASURER:

WILLIAM J. RICHARDSON,

Secretary, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

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PRESIDENT, VICE-PRESIDENTS and

GEORGE B. KERPER, Pres., Mt. Adams and E. P. Inc. Railway Co., Cincinnati, O.

GEORGE W. KIELY, Man. Dir., Toronto Street Railway Co., Toronto, Canada.

FRANK H. MONKS, Gen. Man., West End Street Railway Co., Boston, Mass.

RAFAEL SEMMES, Supt., Citizens' Street Railroad, Memphis, Tenn.

FRANCIS M. EPPLEY, Pres., Orange Cross-Town & B. Railway Co., Orange, N. J.

PLACE OF MEETING, BUFFALO, N. Y.

OFFICERS, 1890-'91.

PRESIDENT:

HENRY M. WATSON,

President, Buffalo Street Railroad, and Buffalo East Side Street Railway, Company, Buffalo, N. Y.

FIRST VICE-PRESIDENT:

WILLIAM A. SMITH,

General Manager, Omaha Street Railway Company, Omaha, Neb.

THIRD VICE-PRESIDENT:

ANDREW D. RODGERS,

President, Columbus Consolidated Street Railroad Company, Columbus, O.

SECOND VICE-PRESIDENT:

CHARLES ODELL,

President, Newburyport & Amesbury Street Railroad Company, Newburyport, Mass.

SECRETARY AND TREASURER:

WM. J. RICHARDSON,

Secretary, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS and
 THOMAS LOWRY, Pres., Minneapolis and St. Paul Street R'y Co's., Minneapolis, Minn.
 DAVID F. HENRY, Pres., Federal Street and P. V. Pass Railway Co., Pittsburgh, Pa.
 ALBERT E. THORNTON, Dir., Atlanta Street Railroad Co., Atlanta, Ga.
 HARVEY M. LITTELL, Gen. Man., Cincinnati Inclined Plane R'y Co., Cincinnati, O.
 THOMAS C. KEEFER, Pres., Ottawa City Pass. Railway Co., Ottawa, Canada.

PLACE OF MEETING, PITTSBURG PA.

OFFICERS, 1891-'92.

PRESIDENT:

JOHN G. HOLMES,

President, Citizens' Traction Company, Pittsburgh, Pa.

FIRST VICE-PRESIDENT:

THOMAS H. McLEAN,

Secretary, Twenty-third Street Railway Company, New York, N. Y.

SECOND VICE-PRESIDENT:

JAMES B. SPEED,

President, Louisville City Railway Company, Louisville, Ky.

THIRD VICE-PRESIDENT:

ALBION E. LANG,

Vice-President, Toledo Consolidated Street Railway Company, Toledo, O.

SECRETARY AND TREASURER:

WM. J. RICHARDSON,

Secretary, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS and
 HENRY M. WATSON, Pres., Buffalo Railway Co., Buffalo, N. Y.
 LEWIS PERRINE, JR., Pres., Trenton Pass. Railway Co. Consolidated, Trenton, N. J.
 W. WORTH BEAN, Pres., St. Joseph and Benton Harbor R'y Co., St. Joseph, Mich.
 MURRY A. VERNER, Pres., Pittsburgh and Birmingham Traction Co., Pittsburgh, Pa.
 THOMAS C. PENINGTON, Treas., Chicago City Railway Co., Chicago.

PLACE OF MEETING, CLEVELAND, O.

OFFICERS, 1892-'93.

PRESIDENT:

D. F. LONGSTREET,

Vice-Pres. and Gen. Man., West End Street Railroad Company, Denver, Col.

FIRST VICE-PRESIDENT:

A. EVERETT,

President, East Cleveland Railroad Company, Cleveland, O.

THIRD VICE-PRESIDENT:

W. WORTH BEAN,

President, St. Joseph & Benton Harbor Electric Ry. Co., St. Joseph, Mich.

SECOND VICE-PRESIDENT:

JOEL HURT,

President, Atlanta Consolidated Street Railroad Company, Atlanta, Ga.

SECRETARY AND TREASURER:

WM. J. RICHARDSON,

Sec. and Treas., Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS and
 JOHN G. HOLMES, Pres., Citizens' Traction Co., Pittsburgh, Pa.
 JOHN D. CRIMMINS, Pres., Metropolitan Traction Co., New York, N. Y.
 THOMAS J. MINARY, Gen. Man., Louisville Railway Co., Louisville, Ky.
 JAMES R. CHAPMAN, Vice-Pres., Consolidated St. Railway Co., Grand Rapids, Mich.
 BENJAMIN E. CHARLTON, Pres., Hamilton Street Railway Co., Hamilton, Ont.

PLACE OF MEETING, MILWAUKEE, WIS.

OFFICERS, 1893-'94.

PRESIDENT:

HENRY C. PAYNE,

Vice-President, Milwaukee Street Railway Company, Milwaukee, Wis.

FIRST VICE-PRESIDENT:

WILLIAM J. STEPHENSON,

President, Metropolitan Railroad Company, Washington, D. C.

SECOND VICE-PRESIDENT:

JAMES R. CHAPMAN,

Vice-President, Consolidated Street Railway Company, Grand Rapids, Mich.

THIRD VICE-PRESIDENT:

LEWIS PERRINE, JR.,

President, Trenton Passenger Railway Company, Consolidated, Trenton, N. J.

SECRETARY AND TREASURER:

WM. J. RICHARDSON,

Sec. and Treas., Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS AND

D. F. LONGSTREET, Vice-Pres., West End Street Railway Co., Denver, Col.

THOMAS H. MCLEAN, Gen. Man., Citizens' Street Railroad Co., Indianapolis, Ind.

EDWARDS WHITAKER, Pres., Lindell Railway Co., St. Louis, Mo.

W. Y. SOPER, Pres., Ottawa Electric Street Railway Co., Ottawa, Can.

E. S. GOODRICH, Pres., Hartford Street Railway Co., Hartford, Conn.

PLACE OF MEETING, ATLANTA, GA.

OFFICERS, 1894-'95.

PRESIDENT:

JOEL HURT,

President, Atlanta Consolidated Street Railway Company, Atlanta, Ga.

FIRST VICE-PRESIDENT:

W. WORTH BEAN,

Pres., St. Joseph & Benton Harbor Electric Railway and Light Co., St. Joseph, Mich.

SECOND VICE-PRESIDENT:

JOHN H. CUNNINGHAM,

Director, Lynn and Boston Railroad Company, Boston, Mass.

THIRD VICE-PRESIDENT:

RUSSELL B. HARRISON,

Pres., Terre Haute Street Railway Company, Terre Haute, Ind.

SECRETARY AND TREASURER:

WM. JAMES RICHARDSON,

Director, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS AND

HENRY C. PAYNE, Vice-Pres., Milwaukee Street Railway Co., Milwaukee, Wis.

WILLIAM H. JACKSON, Pres., Nashville Street Railway, Nashville, Tenn.

D. G. HAMILTON, { Pres., Cass Ave. and Fair Grounds } St. Louis, Mo.

{ Ry. Co. and St. Louis R. R. Co. }

GRANVILLE C. CUNNINGHAM, Man., Montreal Street Railway Co., Montreal, Can.

JOHN N. PARTRIDGE, Pres., Brooklyn City & Newtown Railroad Co., Brooklyn, N. Y.

PLACE OF MEETING, MONTREAL, CANADA.

OFFICERS, 1895-'96.

PRESIDENT:

H. M. LITTELL,

Pres. Atlantic Avenue Railroad Company, Brooklyn, N. Y.

FIRST VICE-PRESIDENT:

GRANVILLE C. CUNNINGHAM,

Man. Montreal Street Railway Company, Montreal, Can.

SECOND VICE-PRESIDENT,

WILLIAM H. JACKSON,

Pres. Nashville Street Railway, Nashville, Tenn.

THIRD VICE-PRESIDENT:

J. WILLARD MORGAN,

Pres. Camden, Gloucester and Woodbury Railroad Company, Camden, N. J.

SECRETARY AND TREASURER:

T. C. PENINGTON,

Treasurer Chicago City Railway Co. Chicago, Ill.

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS AND

JOEL HURT, Pres. Atlanta Consolidated Street Railway Co., Atlanta, Ga.

PRENTISS CUMMINGS, Vice-Pres. West End Street Railway Co., Boston, Mass.

C. G. GOODRICH, Vice-Pres. Twin City Railway Co., St. Paul, Minn.

A. MARKLE, Gen. Man. Lehigh Traction Co., Hazleton, Pa.

W. F. KELLY, Gen. Man. Columbus Street Railway Co., Columbus, Ohio.

PLACE OF MEETING, ST. LOUIS, MO.

OFFICERS, 1896-'97.

PRESIDENT :

ROBERT McCULLOCH,

*Vice-Pres. and Gen. Man. Citizens', Cass Avenue and St. Louis Railroad Companies,
St. Louis, Mo.*

FIRST VICE-PRESIDENT :

CHARLES S. SERGEANT,

*Gen. Man. West End Street Railway Co.,
Boston, Mass.*

THIRD VICE-PRESIDENT :

C. F. HOLMES,

*Gen. Man. Metropolitan Street Railway
Co., Kansas City, Mo.*

SECOND VICE-PRESIDENT :

D. B. DYER,

*Pres. Augusta Railway and Electric Co.,
Augusta, Ga.*

SECRETARY AND TREASURER :

T. C. PENINGTON,

*Treas. Chicago City Railway Co.,
Chicago, Ill.*

EXECUTIVE COMMITTEE :

PRESIDENT, VICE-PRESIDENTS AND

H. M. LITTELL, Vice Pres. and Gen. Man. Metropolitan St. Ry. Co., New York City.

H. P. BRADFORD, Gen. Man. Cincinnati Inclined Plane Railway Co., Cincinnati, Ohio.

CHARLES H. SMITH, Gen. Supt. Troy City Railway Co., Troy, N. Y.

HARRY SCULLIN, Vice-Pres. and Gen. Man. Union Depot Railroad Co., St. Louis, Mo.

GEORGE B. HIPPEE, Gen. Man. Des Moines City Railway Co., Des Moines, Iowa

PLACE OF MEETING, NIAGARA FALLS, N. Y.

OFFICERS, 1897-'98.

PRESIDENT :

ALBION E. LANG,

President Toledo Traction Co., Toledo, Ohio

FIRST VICE-PRESIDENT :

W. CARYL ELY,

*President Buffalo and Niagara Falls
Electric Ry. Co., Niagara Falls, N. Y.*

THIRD VICE-PRESIDENT :

EDWARD G. CONNETTE,

*Gen. Man. Nashville Street Railway
Nashville, Tenn.*

SECOND VICE-PRESIDENT :

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*President United Traction Co.,
Reading, Pa.*

SECRETARY AND TREASURER :

T. C. PENINGTON,

*Treasurer Chicago City Railway Co.,
Chicago, Ill.*

EXECUTIVE COMMITTEE :

PRESIDENT, VICE-PRESIDENTS AND

ROBERT McCULLOCH, Vice-President and Gen. Man. Citizens', Cass Ave. and St. Louis
R. R. Companies, St. Louis, Mo.

C. DENSMORE WYMAN, Gen. Man. New Orleans Traction Co., Ltd., New Orleans, La.

HENRY C. MOORE, President Trenton Street Railway Co., Trenton, N. J.

JOHN M. ROACH, Vice-President and Gen. Man. North Chicago Street Railroad Co.,
Chicago, Ill.

ROBERT S. GOFF, President and Gen. Man. Globe Street Railway Co., Fall River, Mass

PLACE OF MEETING, BOSTON, MASS.

OFFICERS, 1898-'99.

PRESIDENT :

CHARLES S. SERGEANT,

Second Vice-President Boston Elevated Railway Co., Boston, Mass.

FIRST VICE-PRESIDENT :

HENRY C. MOORE,

*President Trenton Street Railway Co.,
Trenton, N. J.*

THIRD VICE-PRESIDENT :

WALTON H. HOLMES,

*Vice-Pres. and Gen. Man. Metropolitan
Street Railway Co., Kansas City, Mo.*

SECOND VICE-PRESIDENT :

ERNEST WOODRUFF,

*Pres. Atlanta Consolidated Street Railway
Co., Atlanta, Ga.*

SECRETARY AND TREASURER :

T. C. PENINGTON,

*Treas. Chicago City Railway Co.,
Chicago, Ill.*

EXECUTIVE COMMITTEE :

PRESIDENT, VICE-PRESIDENTS AND

ALBION E. LANG, President Toledo Traction Co., Toledo, Ohio.

GEORGE A. YUILLE, Second Vice-Pres. West Chicago Street Railroad Co., Chicago, Ill.

FRANK G. JONES, Vice-President Memphis Street Railway Co., Memphis, Tenn.

JOHN I. BEGGS, Gen. Man. Milwaukee Electric Railway and Light Co., Milwaukee, Wis.

IRA A. McCORMACK, Gen. Supt. Brooklyn Heights Railroad Co., New York, N. Y.

PLACE OF MEETING, CHICAGO, ILL.

OFFICERS, 1899-1900.

PRESIDENT:

JOHN M. ROACH,

President Chicago Union Traction Co., Chicago, Ill.

FIRST VICE-PRESIDENT:

JOHN A. RIGG,

*President United Traction Co.,
Reading, Pa.*

SECOND VICE-PRESIDENT:

HERBERT H. VREELAND,

*President Metropolitan Street Railway Co.,
New York, N. Y.*

THIRD VICE-PRESIDENT:

FRANK G. JONES,

*Vice-President Memphis Street Railway Co.,
Memphis, Tenn.*

SECRETARY AND TREASURER:

T. C. PENINGTON,

*Treasurer Chicago City Railway Co.,
Chicago, Ill.*

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS AND

CHARLES S. SERGEANT, Second Vice-President Boston Elevated Railway Co., Boston, Mass.

CHARLES K. DUREIN, General Superintendent Denver City Tramway Co., Denver, Colo.

NICHOLAS S. HILL, JR., General Manager Charleston Consolidated Gas and Electric Co.,
Charleston, S. C.

CHARLES W. WASON, President Cleveland, Painesville & Eastern Railway Co., Cleveland, O.

JOHN R. GRAHAM, President Quincy and Boston Street Railway Co., Quincy, Mass.

PLACE OF MEETING, KANSAS CITY, MO.

OFFICERS, 1900-1901.

PRESIDENT:

WALTON H. HOLMES,

President Metropolitan Street Railway Co., Kansas City, Mo.

FIRST VICE-PRESIDENT:

HERBERT H. VREELAND,

*President Metropolitan Street Railway Co.,
New York, N. Y.*

SECOND VICE-PRESIDENT:

N. H. HEFT,

*President Meriden Electric Railroad Co.,
Meriden, Conn.*

THIRD VICE-PRESIDENT:

JOHN B. McCLARY

*General Manager Birmingham Railway, Light
and Power Co., Birmingham, Ala.*

SECRETARY AND TREASURER:

T. C. PENINGTON,

*Treasurer Chicago City Railway Co.,
Chicago, Ill.*

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS AND

JOHN M. ROACH, President Chicago Union Traction Co., Chicago, Ill.

FRANK L. FULLER, General Manager Wilkes-Barre and Wyoming Valley Traction Co.,
Wilkes-Barre, Pa.

GEORGE W. BAUMHOFF, General Manager St. Louis Transit Co., St. Louis, Mo.

JOHN R. GRAHAM, President Brockton Street Railway Co., Brockton, Mass.

JOHN HARRIS, Superintendent Cincinnati Street Railway Co., Cincinnati, O.

PLACE OF MEETING, NEW YORK, N. Y.

OFFICERS, 1901-1902.

PRESIDENT:

HERBERT H. VREELAND,

President Metropolitan Street Railway Co., New York, N. Y.

FIRST VICE-PRESIDENT:

CHARLES W. WASON,

*President Cleveland, Painesville and
Eastern Railroad Co., Cleveland, O.*

SECOND VICE-PRESIDENT:

ELWIN C. FOSTER,

*Vice-President Boston and Northern
Street Railway Co., Boston, Mass.*

THIRD VICE-PRESIDENT:

H. M. SLOAN,

*General Manager Calumet Electric Street
Railway Co., Chicago, Ill.*

SECRETARY AND TREASURER:

T. C. PENINGTON,

*Treasurer Chicago City Railway Co.,
Chicago, Ill.*

EXECUTIVE COMMITTEE:

PRESIDENT, VICE-PRESIDENTS AND

WALTON H. HOLMES, President Metropolitan Street Railway Co., Kansas City, Mo.

JOHN A. RIGG, President United Traction Co., Reading, Pa.

DANIEL B. DYER, President Augusta Railway and Electric Co., Augusta, Ga.

T. J. NICHOLL, Vice-President Rochester Railway Co., Rochester, N. Y.

GEORGE W. DICKINSON, Vice-President Seattle Electric Co., Seattle, Wash.

PLACE OF MEETING, DETROIT, MICH.

MINUTES.

WEDNESDAY—MORNING SESSION.

LIGHT GUARD ARMORY,
DETROIT, MICH., OCTOBER 8, 1902.

President Herbert H. Vreeland, of New York, called the convention to order at 11:15 o'clock and said:

Ladies and Gentlemen:

The first thing on the program this morning is an address of welcome to the delegates of this convention, to be made by the Hon. William C. Maybury, Mayor of Detroit. The delegates to the Convention from the city of Detroit require no introduction to their Mayor. Those from the other parts of the United States who have read an account of the events connected with the social, financial and political history of this section and other sections of the country also need no introduction to the Hon. William C. Maybury.

Ladies and Gentlemen: I have the honor of introducing Mayor Maybury, of Detroit, who has kindly consented to address the convention.

ADDRESS OF WELCOME BY MAYOR MAYBURY.

Mr. President, Ladies and Gentlemen:

Your good President has said that I have consented to deliver a few words of welcome to you upon your visit to this good old city; but I beg his permission to change the word *consent* by saying that I have craved the privilege of welcoming you to this city. (Applause.) To bid welcome to ladies and gentlemen like you is not a matter of consent; it is a privilege; and I have been waiting for several months for this privilege, and I am glad that the time has come when I can avail myself of it. (Applause.)

It is not a question of telling you that you are welcome

—it is rather the privilege of thanking you because you have come. The favor is all on your part, because no convention can assemble for the purpose of bringing men of your standing in the business world together that is not only a favor to the city of Detroit, but to its people. The conventions that are held in this city every summer and throughout the year form a sort of academic course for our people; and you will appreciate, if you will reflect for a moment, the privilege that you give us of learning of those things whereof we would be in ignorance were it not for your coming. Thousands of our people will come and learn from the exhibition of appliances in the hall above and on the street. They will learn things that they never knew before by an object lesson, given to them by your most admirable exhibition of railway appliances. Through the discussions of this convention we shall learn more and know more of the operations of the great systems of street railways, both city and suburban, throughout this God-favored land. Therefore, when I say to you welcome to Detroit to-day, I mean that we thank you because you have come, and we hope you will appreciate the warmth of our welcome. (Applause.)

Now, my dear friends, you occupy a very close place in the relations which bear upon the comfort and convenience and well-being of our people. Conventions often assemble here, the local interest in which is confined largely to those who assemble and discuss things which are important to them, and the importance to us, the public, is very indirect and oftentimes hardly to be appreciated; but in your case—for the operation of the street railways of the country, which is the life work of the gentlemen who are assembled here this morning, is of personal interest to every citizen—you come very near to the comfort and well-being of the people. For this reason we are particularly interested in your convention and your discussions become a part of the history of what we want to know. Therefore, for that and other personal reasons which we are glad to consider, you are doubly, aye, thrice doubly, welcome to this good old city of Detroit.

We have here a city that is so laid out as to be peculiarly adapted to street railway service. Here we have a converging of all lines from the suburbs into one center, practically, and that also is the plan of the city itself; for it was laid out about a century ago after the plan of the city of Washington; in fact, the plan of that city was brought here and as far as it could be made applicable to the new city of Detroit you have a reproduction of the capital itself. If you will take the city hall as the capitol, the radiating streets and avenues are identically the same as in Washington; but the persons who laid out the city, the territorial governor and judges, had little knowledge of what Detroit was to be. Perhaps, I ought not to say that, as they gave us a good city; yet they laid out the city with the streets radiating for a distance much less than a mile from the center, and from that point the plan is discontinued.

I say that you come close to the well-being of our people and in the city of Detroit the conditions are most favorable for the prosecution of your particular business. Our avenues are wide; our people ride in the cars, and they want to get the best conveniences in the matter of transportation that are possible, and we believe we have them. We are after the best and do not want anything less than the best. Not alone that, but we have no hills to contend with. Aside from the slight rise from the river, which is scarcely to be considered, Detroit is practically almost flat, just rising enough toward the north to give fair drainage; but in every other way I think the conditions in Detroit are peculiarly favorable to the successful operation of a street railway. I desire to say, in spite of the modesty of our railroad management in Detroit—for you know anything managed by Jere Hutchins would be modestly managed—that we point with pride to the splendid operation of our street railways; to the cleanliness of our cars; to the gentlemanly conduct of those in charge and everything that goes to make the operation of a street railroad substantially successful and complete.

My dear friends, the notable thought that comes to us in a convention like this is the fact that the world is growing

so catholic and so broad. You may say the men upstairs who have inventions and apparatus to display are here for commercial reasons. I grant you that the inventor is worthy of a proper return for his genius, as the laborer is worthy of his hire; but in the broadest sense those exhibiting appliances that are designed to make the operation of the cars safer, more rapid and to insure greater comfort and cleanliness in them are inspired by other reasons. These men give these things to you and to the world, actuated not alone by commercial considerations, but in order that the cult with which you and they are connected shall be a great success. For it is a grand thing to stand up in the race of men, as some individuals do, like mountain peaks that are themselves above the ranges about them; and it is a pleasure for most of us to belong to something in this world, some organization or association of which we are proud to say, for example, I belong to the cult of railway operators, the men who supply the railway appliances and who operate the railway systems in the great cities of this country. You are proud to say that you belong to such an organization; you are proud of it because the connection with such an organization is one which places honor on any man; and a measure of any man's usefulness in this world is not what he can do for himself alone, but for others; for the meanest man you can think of is the man who has some secret that belongs to the world and yet tries to hide it. This world of ours has been rich and poor a thousand times. Why? Because in the providence of God, as I believe, there are times when men are singled out here and there, in the palace and in the cottage, in the humble walks of life, as well as the higher—some man is singled out who seems to have a gift. In medicine it may be a man who has the gift of curing some peculiar disease; in mechanics it may be a Tesla, who discovered the power of looking through space, or an Edison, who, from day to day, beholds the wonderful inspirations which appear before his vision and which he puts into practical use. Had these men lived hundreds of years ago they would have had no idea of the stewardship reposed in them by

the discoveries which they had been inspired to make; they would have had no thought of giving them to the world, but would look upon them only as something they could turn to their own individual advantage. Years ago almost every neighborhood had some old person who had the secret of the mad stone, but it was effective and could cure rabies. If you asked him "Will you give me that secret?" he would answer, "No, I have it from my father and will transmit it to my son." Possibly he died and the secret died with him. Could Pasteur do that to-day? Could he wrap himself up in the secret of his art and say, "Bring to me the children threatened with rabies and I will cure them"? No, the world would take hold of him and say, "If you have this secret give it to the world and the world will pay you. You will be paid a thousand fold in the honor that will surround your name, far above any reward in money." (Applause.) It is so in every art that is discovered. It is discovered for the world. If Edison should die to-day there are hundreds who would carry on his discoveries. If Tesla should die to-day there are thousands considering the things which he discovered. In every branch of medicine, every art we know of, there is no man who wraps the secret up within himself and says, "I am going to keep it." No, he must give it to the world and recognize the stewardship which God has put upon it.

These conventions are significant of the age in which we live, and the world will not be poorer, but richer, because once discovered inventions are committed to the children of men for their good and go on for all time. The world will continue to be enriched as long as the children of men dwell upon its surface. At a recent exhibition of our State fair at Pontiac I saw something that struck me as a peculiar invention. I am now giving you an illustration of my idea when I say that the measure of each man's usefulness is what he does in the world, not only for himself, but for others. I passed the plow department at the fair and saw a man, evidently a farmer—you could see by his general appearance and his hard hands that he had held the plow many a day—

who stood exhibiting a device whereby, with the movement of a lever, the plow could be turned at the end of the furrow. I could not but think of the relief in the use of this device to the plower as he came to the end of the furrow. Instead of following the old way of pulling the plow around with the horses and the feet of the horses becoming entangled in the traces, causing the little cuss words that steal out, here was an invention which did away with all this cause of trouble. I thought to myself that here was a man who has done something for the world, something of practical value, of everyday need, who contrived by a simple arrangement of a lever to enable a man to easily turn a plow. I felt that this man had done his share of the world's work. I wish that I could do something as plainly for the good of the children of men as you have done, was my thought, and I felt that there was a man who had accomplished something of real value, whose useful invention would confer benefits upon mankind after his name had been forgotten. So it is in all avenues of life, where men are constantly striving to produce that which will make existence better for us all.

Coming with such thoughts and purpose, why are you not welcome to Detroit? We have not a very abundant supply of coal (laughter), but possibly after the coal convention of to-morrow we may have a good deal more. (Applause.) Don't think of the cold, talk. I believe many of these things are as we think they are. Just imagine that it is warm. It is not October; it is July; and reach out, wrap yourself with the blanket of hospitality of these good people of our city and you cannot be cold, coal or no coal.

You come, my friends, to a peculiar city; old, and yet new. I said to you a few moments ago that the city was laid out on the plan of the city of Washington about one hundred years ago; but that was not the beginning of its history; Detroit was founded in 1701, and a year ago we celebrated the two hundredth anniversary of the founding of the city. For the first hundred years Detroit was, allow me to say, a French city, where the French language was spoken and where

all the simple ways of that courteous people were exercised in all their refinements and higher attributes. Indeed, in my own lifetime, and I will say for the ladies present, that I am not as old as I look—I might say that being a bachelor I never lose any opportunities—even in my boyhood I remember the scenes along the river were such as would remind you of the opening lines of Longfellow's *Evangeline*, where he describes beautiful Arcadia, the old French homes, the era of plenty, with happiness and buoyancy and cheer everywhere, and the doors wide open, or perhaps a latch string hanging out, easily pulled, with a disposition to give comfort to the stranger and to make hospitality almost a part of religion. I sometimes think that the blessings that have come down to this goodly city, and its exemption from pestilence and disease, is consequent upon the blessings bestowed upon the early founders; for you will not dispute the fact that Detroit is the gateway of the civilization and Christianization of the great Northwest. Some had passed up the Mississippi, like the followers of De Soto, and some through Illinois; some were missionaries who were led mainly by the zeal of the cause, and in other cases they were adventurers led by the story of springs and rivers filled with golden sands; but those who came to Detroit were settlers and came with packs on their backs, and they brought with them implements of industry; the farmer, carpenter, cobbler, all came to make a community and landed within a stone's throw of where you are assembled this morning. Their first act was not one of savage onslaught upon the Indians, who watched from behind trees to see what the white settlers would do. The Indians discovered that one of the first acts of the new settlers was an act of worship, with no temple save that which is always above us, no canopy save the trees which grew beautifully on the river shore, no witness save the wild animal and the bird, and when the Indian peered through the bushes, what did he see—he saw a kindly invitation to come and kneel down in quiet thankfulness to God that He had cast the lot of the settlers in such a beautiful place, with a prayer that the homes which they were about to build should be happy and prosper-

ous. For fifty years no Indian blood was shed, so kindly were the people and the Indians that they brought the amity of Bethlehem with them. The white settlers treated the Indians fairly and for many years they lived on terms of peace and good will, and our city was founded amid such blessings as those.

My dear friends, if it requires anything more to add to the warmth of your welcome in Detroit, you must certainly see it in the bright sunlight of this morning. I do not know but the good weather is in answer to the prayers of those who looked for your coming. The skies for the last week have been very dark and heavy, and perhaps in answer to the hopes of the local street railway officials they have broken away and given us this glorious sunshine this morning. You will find a welcome in the broad streets and walks; hospitality is marked in this city; and as you go along you do not feel you are elbowing some one. We built our city for the accommodation of the stranger and are lonesome when we have not guests. You must feel that the streets were laid out on the broad scale that you see them for the accommodation of the friends who might be with us. I hope your stay will be in every way enjoyable. The streets of the city are laid out in a somewhat irregular manner and even those who are natives and to the manner born, occasionally, when the night is dark and the lights somewhat dim, do not always find their way in the most direct route to the place for which they are bound; and if any such fate should overcome you, and it is possible that it may, permit me to mention that you will notice on the street corners here and there gentlemen who in other cities would be dominated policemen. They are not known as such here. They are guardians for the stranger. (Laughter and applause.) Do not pay any attention to the belt around the waists of these gentlemen. They never draw the little clubs which they have in their belts. They are used to frighten the children. If this confusion as to your whereabouts should overtake you at any time, step up to one of these gentlemen and tell him that you are attending the street railway men's con-

vention and you will be wafted to the haven you desire. (Applause.)

President Vreeland—Mr. Mayor, on behalf of the officers and members of the American Street Railway Association, I tender to you our hearty thanks for your very cordial address of welcome. We represent a body of practical, hard-working men; our industry has more to do with the comforts and conveniences of the daily lives of the seventy millions of people of the United States than any other industry. We have to carry this great mass of people safely over the cities' streets to the suburban areas; to the home and the school; and we are most important factors in the social and business life of every community in the country. The stores, the manufacturing industries, in fact, all of the daily life of the city, is dependent upon the regular and orderly conduct of our business; and if our systems are interrupted it means inconvenience and loss to every city and all citizens.

The next order of business is the calling of the roll. The registration at the door will be taken in place of the roll call, and that will be passed.

DELEGATES OF MEMBERS.

(ARRANGED ALPHABETICALLY ACCORDING TO CITIES.)

The following named gentlemen were in attendance at the meeting, representing companies that are members of the Association:

AKRON, Ohio.....	Charles Currie, Gen. Man., Northern Ohio Traction Co.
“ “	W. H. Douglas, Gen. Supt., Northern Ohio Traction Co.
“ “	T. W. Sheldon, Supt. of M. P., Northern Ohio Traction Co.
“ “	J. T. Ross, Chief Eng., Northern Ohio Traction Co.
“ “	Charles H. Lahr, Cashier, Northern Ohio Traction Co.
ALTON, Ill.....	George D. Rosenthal, Elec. Eng., Alton Ry. Gas and Elec. Co.
ALTOONA, Pa.....	S. S. Crane, Gen. Man., Altoona and Logan Valley Elec. Ry. Co.
“ “	H. G. Hinkle, Supt., Altoona and Logan Valley Elec. Ry. Co.

- ANDERSON, Ind.....William C. Sampson, Treas., Union Traction Co. of Indiana.
- “ “P. L. Dunn, Asst. Gen. Man., Union Traction Co. of Indiana.
- “ “Charles A. Baldwin, Gen. Pass. Agt., Union Traction Co. of Indiana.
- “ “Will H. Bloss, Chief Eng. and Roadmaster, Union Traction Co. of Indiana.
- “ “Albert S. Richey, Elec. Eng., Union Traction Co. of Indiana.
- “ “John L. Watson, Mast. Mech., Union Traction Co. of Indiana.
- ASBURY PARK, N. J..George B. Cade, Aud., Atlantic Coast Elec. R. R. Co.
- “ “ “ ..Scott F. Hazelrigg, Gen. Man., Atlantic Coast Elec. R. R. Co.
- ASHTABULA, Ohio....B. W. Baldwin, Treas., Pennsylvania and Ohio Ry. Co.
- “ “H. A. Blyth, Man., Pennsylvania and Ohio Ry. Co.
- ATCHISON, Kan.....C. M. Marshall, Gen. Supt., Atchison Ry., Light and Power Co.
- ATLANTA, Ga.....P. S. Arkwright, Pres., Georgia Ry. and Elec. Co.
- “ “ Thomas K. Glenn, Vice-Pres., Georgia Ry. and Elec. Co.
- “ “J. G. Rossman, Vice-Pres., Georgia Ry. and Elec. Co.
- “ “D. A. Belden, Vice-Pres. and Gen. Man., Georgia Ry. and Elec. Co.
- “ “George B. Graves, Purch. Agt., Georgia Ry. and Elec. Co.
- “ “A. M. Moore, Mast. Mech., Georgia Ry. and Elec. Co.
- AUGUSTA, Ga.....Daniel B. Dyer, Pres. Augusta Ry. and Elec. Co.
- “ “A. J. McKnight, Aud., Augusta Ry. and Elec. Co.
- AURORA, Ill.....Frank M. Zimmermann, Gen. Man., Elgin, Aurora and Southern Traction Co.
- BALTIMORE, Md....W. H. Staub, Purch. Agt., United Rys. and Elec. Co.
- “ “H. H. Adams, Supt. of Shops, United Rys. and Elec. Co.
- BAY CITY, Mich.....E. S. Dimmock, Gen. Man., Bay Cities Consolidated Ry. Co.
- “ “ “J. J. Thorne, Chief Elec., Bay Cities Consolidated Ry. Co.
- BINGHAMTON, N. Y..G. Tracy Rogers, Pres., Binghamton R. R. Co.
- “ “George E. Green, Vice-Pres., Binghamton R. R. Co.
- BIRMINGHAM, Ala...W. B. Brockway, Consulting Accountant, Birmingham Ry. Light and Power Co.
- BOSTON, Mass.....Henry L. Wilson, Aud., Boston Elevated Ry. Co.
- “ “Howard F. Grant, Sec. to Vice-Pres., Boston Elevated Ry. Co.
- “ “D. D. Bartlett, Aud., Boston and Northern St. Ry. Co.
- “ “E. C. Foster, Gen. Man., Boston and Northern St. Ry. Co.

BOSTON, Mass	.....	Walter Trumbull, Dir., Boston and Worcester St. Ry. Co.
"	"	.....J. F. Shaw, Dir., Boston and Worcester St. Ry. Co.
"	"	.....H. Fisher Eldridge, Dir., Boston & Worcester St. Ry. Co.
"	"	.....Robert S. Goff, Gen. Supt., Old Colony St. Ry. Co.
"	"	.....George W. Palmer, Elec. Eng., Old Colony St. Ry. Co.
BRIDGEPORT, Conn.		R. C. Cram, Eng. Dept., Connecticut Ry. and Lighting Co.
BRIDGETON, N. J.	.....	B. Frank Hires, Gen. Man., Bridgeton and Millville Traction Co.
"	"	....J. R. Blackhall, Supt. of Construction, Bridgeton and Millville Traction Co.
"	"	....C. F. W. Meyers, Elec. Eng., Bridgeton and Millville Traction Co.
"	"	....J. W. Crawford, Chief Clerk, Bridgeton and Millville Traction Co.
BUFFALO, N. Y.	.....	W. Caryl Ely, Pres., International Ry. Co.
"	"	.....R. F. Rankine, Sec. and Treas., International Ry. Co.
"	"	.....H. M. Pease, Aud., International Ry. Co.
"	"	.....T. E. Mitten, Gen. Man., International Ry. Co.
"	"	.....Edward McDonnell, Asst. to Gen. Man., International Ry. Co.
"	"	.....C. K. Marshall, Elec. Eng., International Ry. Co.
"	"	.....C. A. Coons, Supt. Transportation, International Ry. Co.
"	"	.....J. Millar, Supt. Rolling Stock and Buildings, International Ry. Co.
"	"	.....Fred. D. Hoffman, Sec. to Gen. Man., International Ry. Co.
"	"	.....J. H. Murray, Div. Supt., International Ry. Co.
"	"	.....C. F. Weir, Supt. of Transportation Dept., International Ry. Co.
"	"	.....T. W. Wilson, Supt. of Con., International Ry. Co.
"	"	.....P. J. Murphy, Asst. Elec. Eng., International Ry. Co.
"	"	.....A. J. Farrell, Claim Agent, International Ry. Co.
"	"	.....J. E. Stephenson, Pass. and Freight Agent, International Ry. Co.
"	"	.....J. C. Rothery, Div. Supt., International Ry. Co.
"	"	.....J. M. Bostwick, Man. of Bridges, International Ry. Co.
"	"	.....J. W. Crawford, Special Agent, International Ry. Co.
"	"	.....E. F. Seixas, Guest, International Ry. Co.
"	"	.....G. P. Wilson, Guest, International Ry. Co.
BUTTE, MONT.	.....	Jesse R. Wharton, Gen. Man., Butte Elec. Ry. Co.
CAMDEN, N. J.	.....	W. E. Harrington, Vice-Pres. and Gen. Man., Camden and Suburban Ry. Co.
"	"	.....Heulings Lippincott, Treas., Camden and Suburban Ry. Co.

CAMDEN, N. J.....	G. Genge Browning, Dir., Camden and Suburban Ry. Co.
CANTON, Ohio.....	L. E. Myers, Vice-Pres., Canton-Akron Ry. Co.
“ “	G. W. Rounds, Gen. Man., Canton-Akron Ry. Co.
“ “	E. W. Rauch, Supt., Canton-Akron Ry. Co.
“ “	L. J. O'Toole, Asst. Supt., Canton-Akron Ry. Co.
CHARLESTON, S. C....	Pinckney J. Ballaguer, Sec. and Aud., Charleston Consolidated Ry., Gas and Elec. Co.
CHESTER, Pa.....	Frank L. Fuller, Gen. Man., Chester Traction Co.
“ “	William S. Bell, Sec. and Treas., Chester Traction Co.
CHICAGO, Ill	H. M. Sloan, Gen. Man., Calumet Elec. St. Ry. Co.
“ “	C. N. Duffy, Sec. and Aud., Chicago City Ry. Co.
“ “	T. C. Penington, Treas., Chicago City Ry. Co.
“ “	Richard McCulloch, Asst. Gen. Man., Chicago City Ry. Co.
“ “	M. O'Brien, Mast. Mech., Chicago City Ry. Co.
“ “	C. E. Lund, Draughtsman, Chicago City Ry. Co.
“ “	F. E. Smith, Aud., Chicago Consolidated Traction Co.
“ “	J. Z. Murphy, Elec. Eng., Chicago Consolidated Traction Co.
“ “	F. E. Smith, Aud., Chicago Union Traction Co.
“ “	J. Z. Murphy Elec. Eng., Chicago Union Traction Co.
“ “	C. A. Caul, Roadmaster, Chicago Union Traction Co.
“ “	W. F. Griffith, Sec., Northwestern Elevated R. R. Co.
“ “	Frank Hedley, Gen. Supt., Northwestern Elevated R. R. Co.
“ “	William Walmsley, Supt., South Chicago City Ry. Co.
CINCINNATI, Ohio....	George R. Scrugham, Pres., Cincinnati and Eastern Elec. Ry. Co.
“ “	Ellis G. Kinkead, Gen. Counsel, Cincinnati and Eastern Elec. Ry. Co.
“ “	Dana Stevens, Treas., Cincinnati Traction Co.
“ “	Robert Dunning, Mast. Mech., Cincinnati Traction Co.
“ “	H. C. Genrich, Elec., Cincinnati Traction Co.
CLEVELAND, Ohio...	John Ehrhardt, Sec. and Treas., Cleveland City Ry. Co.
“ “ ...	W. C. Phelps, Pur. Agt., Cleveland City Ry. Co.
“ “ ...	Horace E. Andrews, Pres., Cleveland Elec. Ry. Co.
“ “ ...	W. G. McDole, Aud., Cleveland Elec. Ry. Co.
“ “ ...	George L. Radcliffe, Gen. Supt., Cleveland Elec. Ry. Co.
“ “ ...	George A. Stanley, Pur. Agt., Cleveland Elec. Ry. Co.
“ “ ...	A. C. Kennedy, Asst. Pur. Agt., Cleveland Elec. Ry. Co.
“ “ ...	D. T. Carver, Chief Eng., Cleveland Elec. Ry. Co.
“ “ ...	W. B. Greenway, Eng. Dept., Cleveland Elec. Ry. Co.
“ “ ...	W. S. Moffat, Aud. Dept., Cleveland Elec. Ry. Co.
“ “ ...	D. S. Moffatt, Mast. Mech., Cleveland Elec. Ry. Co.
“ “ ...	T. Scullin, Gen. Foreman, Cleveland Elec. Ry. Co.

CLEVELAND, Ohio...	C. W. Callaway, Track Foreman, Cleveland Elec. Ry. Co.
"	" ...Chas. W. Wason, Pres., Cleveland, Painesville and Eastern R. R. Co.
"	" ...J. Jordan, Supt. Cleveland, Painesville and Eastern R. R. Co.
"	" ...R. L. Andrews, Gen. Man. Eastern Ohio Traction Co.
"	" ...C. N. Pittenger, Elec., Eastern Ohio Traction Co.
"	" ...F. W. Coen, Sec., Lake Shore Elec. Ry. Co.
"	" ...F. J. Stout, Gen. Supt., Lake Shore Elec. Ry. Co.
"	" ...A. C. Henry, Aud., Lake Shore Elec. Ry. Co.
"	" ...E. K. Owen, Supt., Lake Shore Elec. Ry. Co.
"	" ...H. M. Smith, Supt., Lake Shore Elec. Ry. Co.
"	" ...R. R. Strehlan, Supt., Lake Shore Elec. Ry. Co.
"	" ...F. B. Matthews, Chief Eng., Lake Shore Elec. Ry. Co.
"	" ...F. Heckler, Mast. Mech., Lake Shore Elec. Ry. Co.
COLUMBUS, Ga.....	H. S. Reynolds, Man., Columbus R. R. Co.
COLUMBUS, Ohio.....	Philander V. Burington, Sec. and Aud., Columbus Ry. Co.
"	"Michael S. Hopkins, Gen. Supt., Columbus Ry. Co.
"	"Charles E. Hatt, Mast. Mech., Columbus Ry. Co.
COUNCIL BLUFFS, Ia.	Frank L. Brown, Aud., Omaha and Council Bluffs Ry. and Bridge Co.
"	" "W. B. Tarkington, Gen. Supt., Omaha and Council Bluffs Ry. and Bridge Co.
DANVILLE, Ill.....	S. L. Nelson, Gen. Man., Danville St. Ry. and Light Co.
"	"E. J. Wehrley, Eng., Danville St. Ry. and Light Co.
DAVENPORT, Iowa...	James F. Lardner, Gen. Man., Tri-City Ry. Co.
"	" ...John D. Fish, Mast. Mech., Tri-City Ry. Co.
"	" ...Thomas Gowling, Chief Eng., Tri-City Ry. Co.
DAYTON, Ohio.....	Harrie P. Clegg, Asst. Sec., Dayton and Western Traction Co.
"	"Charles L. S. Tingley, Sec. and Treas., People's Ry. Co.
"	"Joseph L. Breen, Acting Gen. Man., People's Ry. Co.
"	"J. R. Blackhall, Supt. Construction, People's Ry. Co.
DE KALB, ILL.....	John W. Gridden, Supt. De Kalb-Sycamore Elec. Co.
DENVER, Colo.....	J. B. Hogarth, Aud., Denver City Tramway Co.
"	"George L. Rice, Div. Supt., Denver City Tramway Co.
"	"James L. Adams, Div. Supt., Denver City Tramway Co.
DES MOINES, Iowa...	H. H. Polk, Asst. Gen. Man., Des Moines City Ry. Co.
"	" "A. G. Maish, Supt., Des Moines City Ry. Co.
"	" "Ed. Cunningham, Elec. Supt., Des Moines City Ry. Co.
"	" "J. E. Welsh, Supt. Power Plant, Des Moines City Ry. Co.
"	" "Thomas Marlow, Supt. of Roadway, Des Moines City Ry. Co.
"	" "W. I. Hasket, Cashier, Des Moines City Ry. Co.

DETROIT, Mich.	.....	H. A. Everett, Chairman of Board, Detroit United Ry.
"	"	.....Jere C. Hutchins, Pres., Detroit United Ry.
"	"	.....Arthur Pack, Vice-Pres., Detroit United Ry.
"	"	.....George H. Russell, Treas., Detroit United Ry.
"	"	.....Irwin Fullerton, Aud., Detroit United Ry.
"	"	.....A. E. Peters, Asst. Sec., Detroit United Ry.
"	"	.....A. H. Stanley, Gen. Supt., Detroit United Ry.
"	"	.....C. B. King, Asst. to Pres., Detroit United Ry.
"	"	.....Thomas Farmer, Supt. M. P., Detroit United Ry.
"	"	.....John H. Fry, Asst. Gen. Pass. Agent, Detroit United Ry.
"	"	.....George W. Parker, Gen. Express and Pass. Agent, Detroit United Ry.
"	"	.....Albert Eastman, Asst. Gen. Express and Pass. Agent, Detroit United Ry.
"	"	.....E. J. Burdick, Supt. Overhead Dept., Detroit United Ry.
"	"	.....John Kerwin, Supt. Tracks, Detroit United Ry.
"	"	.....Harry Bullen, Asst. Gen. Supt., Detroit United Ry.
"	"	.....Walter Ross, Gen. Claim Agent, Detroit United Ry.
"	"	.....Joseph Bampton, Asst. Aud., Detroit United Ry.
"	"	.....H. V. Catlin, Cashier, Detroit United Ry.
"	"	.....W. R. Frazer, Paymaster, Detroit United Ry.
"	"	.....Robert Oakman, Real Estate Com., Detroit United Ry.
"	"	.....J. D. Hawks, Pres., Detroit, Ypsilanti, Ann Arbor and Jackson Ry.
"	"	.....S. F. Angus, Vice-Pres., Detroit, Ypsilanti, Ann Arbor and Jackson Ry.
"	"	.....F. A. Hinchman, Sec., Detroit, Ypsilanti, Ann Arbor and Jackson Ry.
"	"	.....F. E. Merrill, Gen. Man., Detroit, Ypsilanti, Ann Arbor and Jackson Ry.
"	"	.....Samuel J. Dill, Supt., Detroit, Ypsilanti, Ann Arbor and Jackson Ry.
"	"	.....J. D. Hawks, Pres., Grand Rapids, Grand Haven and Muskegon Ry. Co.
"	"	.....Wallace Franklin, Sec., Grand Rapids, Grand Haven and Muskegon Ry. Co.
"	"	.....Carl M. Vail, Treas., Grand Rapids, Grand Haven and Muskegon Ry. Co.
"	"	.....J. E. Webster, Supt., Grand Rapids, Grand Haven and Muskegon Ry. Co.
"	"	.....W. W. Churchill, Dir., Grand Rapids, Grand Haven and Muskegon Ry. Co.
"	"	.....H. J. Raynor, Eng., Grand Rapids, Grand Haven and Muskegon Ry. Co.

DETROIT, Mich.....	H. H. Kerr, Eng., Grand Rapids, Grand Haven and Muskegon Ry. Co.
" "	B. S. Hanchett, Jr., Pres., Grand Rapids, Holland and Lake Michigan Rapid Ry.
" "	T. W. Gorman, Aud., Grand Rapids, Holland and Lake Michigan Rapid Ry.
" "	S. Hendrie, Gen. Man., Grand Rapids, Holland and Lake Michigan Rapid Ry.
" "	J. W. Busbee, Supt., Grand Rapids, Holland and Lake Michigan Rapid Ry.
" "	W. H. Beach, Dir., Grand Rapids, Holland and Lake Michigan Rapid Ry.
" "	James Van, Acct., Grand Rapids, Holland and Lake Michigan Rapid Ry.
" "	W. L. Granger, Chief Elec., Grand Rapids, Holland and Lake Michigan Rapid Ry.
" "	H. P. Strong, Right of Way Dept., Grand Rapids, Holland and Lake Michigan Rapid Ry.
" "	H. S. Swift, Aud., Rapid Ry. System.
" "	F. W. Brooks, Gen. Man., Rapid Ry. System.
" "	W. O. Wood, Gen. Supt., Rapid Ry. System.
" "	A. C. Marshall, Chief Eng., Rapid Ry. System.
DULUTH, Minn.....	Herbert Warren, Gen. Man., Duluth-Superior Traction Co.
EAST ST. LOUIS, Ill...	L. C. Haynes, Vice-Pres., East St. Louis and Suburban Ry. Co.
" " " " ..	John M. Bramlette, Gen. Supt., East St. Louis and Suburban Ry. Co.
" " " " ..	C. B. Easty, Mast. Mech., East St. Louis and Suburban Ry. Co.
ELMIRA, N. Y.....	H. M. Beardsley, Aud., Elmira Water, Light and R. R. Co.
EL PASO, Texas.....	H. T. Edgar, Vice-Pres. and Man., El Paso Elec. Ry. Co.
FOND DU LAC, Wis..	T. F. Grover, Pres., Fond du Lac St. Ry. and Light Co.
" " " " ..	Ralph Colman, Supt. of Transportation, Fond du Lac St. Ry. and Light Co.
GALVESTON, Texas...	A. Drouhilet, Sec. and Treas., Galveston City Ry. Co.
" " " " ..	H. Griffin, Chief Eng., Galveston City Ry. Co.
GLOUCESTER, N. J...	James R. Shurtz, Aud., Camden, Gloucester and Woodbury Ry. Co.
" " " " ..	M. C. Ludlam, Gen. Man., Camden, Gloucester and Woodbury Ry. Co.
GRAND RAPIDS, Mich.	G. S. Johnson, Vice-Pres. and Gen. Man., Grand Rapids Ry. Co.

- GRAND RAPIDS, Mich. B. S. Hanchett, Jr., Sec. and Treas., Grand Rapids Ry. Co.
- “ “ “ J. C. Madigan, Supt. of Transportation, Grand Rapids Ry. Co.
- “ “ “ W. W. Annable, Mast. Mech., Grand Rapids Ry. Co.
- “ “ “ P. C. Thompson, Track Dept., Grand Rapids Ry. Co.
- GREENBURG, Pa. W. D. Chapman, Gen. Man., Pittsburg, McKeesport and Greenburg Ry. Co.
- HAMILTON, Ohio. John T. Huntington, Aud., Cincinnati, Dayton and Toledo Traction Co.
- “ “ C. E. Palmer, Gen. Supt., Cincinnati, Dayton and Toledo Traction Co.
- “ “ C. E. Warwick, Div. Supt., Cincinnati, Dayton and Toledo Traction Co.
- HAMILTON, Ont. C. K. Green, Traction Man., Hamilton Elec. Light and Cataract Power Co., Ltd.
- “ “ F. B. Griffith, Supt., Hamilton Elec. Light and Cataract Power Co., Ltd.
- “ “ D. N. Miller, Asst. Supt., Hamilton Elec. Light and Cataract Power Co., Ltd.
- HANCOCK, Mich. John H. Oakley, Man., Houghton County St. Ry. Co.
- “ “ C. D. Wyman, Eng., Houghton County St. Ry. Co.
- HARRISBURG, Pa. Frank B. Musser, Supt., Harrisburg Traction Co.
- HARTFORD, Conn. E. S. Goodrich, Pres., Hartford St. Ry. Co.
- “ “ Elmer M. White, Cashier, Hartford St. Ry. Co.
- HOBOKEN, N. J. Warren S. Hall, Gen. Supt., Jersey City, Hoboken and Paterson St. Ry. Co.
- “ “ Thomas W. McAndrews, Supt., Jersey City, Hoboken and Paterson St. Ry. Co.
- HOUSTON, Tex. H. K. Payne, Gen. Supt., Houston Elec. Co.
- HUNTINGTON, W. Va. John Graham, Pres., Camden Inter-State Ry. Co.
- “ “ “ J. C. Lugar, Dir., Camden Inter-State Ry. Co.
- “ “ “ R. Moore, Dir., Camden Inter-State Ry. Co.
- “ “ “ W. W. Magoon, Supt., Camden Inter-State Ry. Co.
- “ “ “ James Fagan, Elec. Eng., Camden Inter-State Ry. Co.
- “ “ “ H. Wellman, Supt. of M. P., Camden Inter-State Ry. Co.
- INDIANAPOLIS, Ind. Hugh J. McGowan, Pres., Indianapolis St. Ry. Co.
- “ “ P. A. Hinds, Pur. Agt., Indianapolis St. Ry. Co.
- “ “ Charles Remelius, Supt. of M. P., Indianapolis St. Ry. Co.
- “ “ Albert B. Herrick, Consulting Eng., Indianapolis St. Ry. Co.
- “ “ Thomas B. McMath, Civil Eng., Indianapolis St. Ry. Co.
- “ “ George Townsend, Pres., Indianapolis, Lebanon and Frankfort Traction Co.

- INDIANAPOLIS, Ind...William M. Moran, Eng., Indianapolis, Lebanon and Frankfort Traction Co.
 " " ...W. Gray, Eng., Indianapolis, Lebanon and Frankfort Traction Co.
 JACKSONVILLE, Fla...William H. Tucker, Man., Jacksonville Elec. Co.
 JERSEY CITY, N. J...C. M. Shipman, Gen. Supt., North Jersey St. Ry. Co.
 " " ...J. M. Yount, Mast. Mech., North Jersey St. Ry. Co.
 JOHNSTOWN, Pa.....H. C. Evans, Dir., Johnstown Pass. Ry. Co.
 JOLIET, Ill.....A. S. Kibbe, Chief Eng., Chicago and Joliet Elec. Ry. Co.
 " "R. E. Moore, Elec., Chicago and Joliet Elec. Ry. Co.
 KALAMAZOO, Mich...D. A. Hegarty, Gen. Man., Michigan Traction Co.
 " " ...R. L. Rand, Supt., Michigan Traction Co.
 " " ...E. C. Corey, Div. Supt., Michigan Traction Co.
 " " ...L. D. McElroy, Div. Supt., Michigan Traction Co.
 " " ...M. Miers, Elec. and Mast. Mech., Michigan Traction Co.
 KANSAS CITY, Kan...Charles O. Evarts, Treas., Kansas City-Leavenworth Ry. Co.
 " " ...Herbert W. Wolcott, Man., Kansas City-Leavenworth Ry. Co.
 KENOSHA, Wis.....Bion J. Arnold, Pres., Kenosha Elec. Ry. Co.
 " "W. L. Arnold, Vice-Pres. and Gen. Man., Kenosha Elec. Ry. Co.
 " "R. V. Arnold, Sec. and Treas., Kenosha Elec. Ry. Co.
 KNOXVILLE, Tenn...C. H. Harvey, Gen. Man., Knoxville Traction Co.
 LANCASTER, Pa.....Frank S. Given, Gen. Man., Conestoga Traction Co.
 " "H. B. Rhodes, Supt., Conestoga Traction Co.
 " "J. D. Maguire, Dir., Conestoga Traction Co.
 LEBANON, Pa.....Frank L. Fuller, Gen. Man., Lebanon Valley St. Ry. Co.
 LEXINGTON, Ky.....R. E. Hunt, Gen. Man. Lexington Ry. Co.
 LITTLE ROCK, Ark...J. A. Trawick, Gen. Man., Little Rock Traction and Elec. Co.
 " " " ...A. G. Moser, Dir., Little Rock Traction and Elec. Co.
 LONDON, Ont.....Charles E. A. Carr, Gen. Man., London St. Ry. Co.
 " "John Break, Supt., London St. Ry. Co.
 " "R. H. Wellburn, Chief Eng., London St. Ry. Co.
 " "E. R. Carrington, Special Agt., London St. Ry. Co.
 LOUISVILLE, Ky....T. J. Minary, Pres. and Gen. Man., Louisville Ry. Co.
 " "Samuel G. Boyle, Sec. and Treas., Louisville Ry. Co.
 " "J. T. Funk, Gen. Supt., Louisville Ry. Co.
 LYNCHBURG, Va....D. C. Frost, Supt., Lynchburg Traction and Light Co.
 " "A. T. Powell, Accountant, Lynchburg Traction and Light Co.
 MENOMINEE, Mich...Edward Daniell, Supt., Menominee Elec. St. Ry. and Power Co.

- MERIDEN, Conn. . . . N. H. Heft, Pres., Meriden Elec. R. R. Co.
- MERRIMAC, Mass. . . . E. P. Shaw, Pres., Haverhill and Amesbury St. Ry. Co.
- “ “ . . . James F. Shaw, Dir., Haverhill and Amesbury St. Ry. Co.
- MILWAUKEE, Wis. . . . John I. Beggs, Pres. and Gen. Man., Milwaukee Elec. Ry. and Light Co.
- “ “ . . . H. C. Mackay, Aud., Milwaukee Elec. Ry. and Light Co.
- “ “ . . . E. W. Olds, Supt. Rolling Stock, Milwaukee Elec. Ry. and Light Co.
- “ “ . . . F. G. Simmons, Supt. of Way, Milwaukee Elec. Ry. and Light Co.
- “ “ . . . M. M. Austin, Supt. of Transportation, Milwaukee Elec. Ry. and Light Co.
- “ “ . . . C. D. Towsley, Right of Way Agt., Milwaukee Elec. Ry. and Light Co.
- “ “ . . . O. M. Rau, Chief Elec. and Supt. of Lighting, Milwaukee Elec. Ry. and Light Co.
- MINNEAPOLIS, Minn. C. G. Goodrich, Vice-Pres., Twin City Rapid Transit Co.
- MOBILE, Ala. J. H. Wilson, Pres. and Man., Mobile Light and R. R. Co.
- “ “ S. M. Coffin, Mast. Mech., Mobile Light and R. R. Co.
- MONTREAL, Can. . . . W. G. Ross, Sec. and Treas., Montreal St. Ry. Co.
- “ “ D. Robertson, Asst. to Gen. Man., Montreal St. Ry. Co.
- “ “ T. W. Casey, Pur. Agt., Montreal St. Ry. Co.
- NEW BEDFORD, Mass. Elton S. Wilde, Treas., Union St. Ry. Co.
- “ “ . . . Edward E. Potter, Gen. Supt., Union St. Ry. Co.
- NEW BRUNSWICK, N. J. Andrew Radel, Vice-Pres., Middlesex and Somerset Traction Co.
- “ “ . . . Thomas F. Walsh, Gen. Man., Middlesex and Somerset Traction Co.
- “ “ . . . James Butler, Supt., Middlesex and Somerset Traction Co.
- “ “ . . . D. W. McGregor, Elec., Middlesex and Somerset Traction Co.
- NEW YORK, N. Y. . . . W. G. Mock, Mast. Mech., Coney Island and Brooklyn R. R. Co.
- “ “ “ . . . M. W. Conway, Trackmaster, Coney Island and Brooklyn R. R. Co.
- “ “ “ . . . Herbert H. Vreeland, Pres. and Gen. Man., Interurban St. Ry. Co.
- “ “ “ . . . Oren Root, Jr., Asst. Gen. Man., Interurban St. Ry. Co.
- “ “ “ . . . Henry A. Robinson, Solicitor, Interurban St. Ry. Co.
- “ “ “ . . . R. W. Meade, Asst. to Pres., Interurban St. Ry. Co.
- “ “ “ . . . A. C. Tully, Pur. Agent, Interurban St. Ry. Co.
- “ “ “ . . . T. A. Delaney, Supt. of Transportation, Interurban St. Ry. Co.

NEW YORK, N. Y.	...	Thomas Millen, Gen. Mast Mech., Interurban St. Ry. Co.
"	"	" ... W. Boardman Reed, Eng. Maintenance of Way, Interurban St. Ry. Co.
"	"	" ... Hon. J. F. Daly, Interurban St. Ry. Co.
"	"	" ... H. E. Vreeland, Interurban St. Ry. Co.
"	"	" ... Frank Wells, Interurban St. Ry. Co.
"	"	" ... W. C. Gotshall, Pres., New York and Port Chester R. R. Co.
"	"	" ... C. O. Mailloux, Eng., New York and Port Chester R. R. Co.
"	"	" ... F. P. Maize, Supt. M. P., New York and Queens County Ry. Co.
"	"	" ... C. G. Fitch, Supt. of Transportation, New York and Queens County Ry. Co.
NORTH ADAMS, Mass.	W. T. Nary, Supt., Hoosac Valley St. Ry. Co.	
OAKLAND, Cal.	.....	J. Q. Brown, Asst. Gen. Man. and Eng., Oakland Transit Co.
OIL CITY, Pa.	.....	J. H. Forbush, Supt., Citizens' Traction Co.
ONEIDA, N. Y.	.....	C. Loomis Allen, Pres., Oneida Ry. Co.
"	"	" W. K. Auhbold, Dir., Oneida Ry. Co.
OSHKOSH, Wis.	.....	E. E. Downs, Vice-Pres., Winnebago Traction Co.
"	"	" J. W. Hinebaugh, Dir., Winnebago, Traction Co.
OTTAWA, Ont.	.....	T. Ahearn, Pres., Ottawa Elec. Ry. Co.
"	"	" Warren Y. Soper, Dir., Ottawa Elec. Ry. Co.
PEORIA, Ill.	.....	L. E. Myers, Gen. Man., Peoria and Pekin Terminal Ry. Co.
"	"	" N. C. Draper, Gen. Supt., Peoria and Pekin Terminal Ry. Co.
PHILADELPHIA, Pa.	.....	R. G. Oliver, Mast. Mech., Philadelphia Rapid Transit Co.
"	"	" ... Frank L. Fuller, Gen. Man., Roxborough, Chestnut Hill and Norristown Ry. Co.
"	"	" ... William S. Bell, Aud., Roxborough, Chestnut Hill and Norristown Ry. Co.
PITTSBURG, Pa.	.....	W. B. Carson, Sec., Consolidated Traction Co.
"	"	" C. S. Mitchell, Aud., Consolidated Traction Co.
"	"	" C. W. Lepper, Pur. Agt., United Traction Co.
"	"	" Fritz Uhlenhaut, Chief Eng., United Traction Co.
"	"	" H. P. Clark, Mast. Mech., United Traction Co.
PLYMOUTH, Mass.	.....	C. D. Wyman, Man., Brockton and Plymouth St. Ry. Co.
"	"	" ... L. R. Nash, Elec. Eng., Brockton and Plymouth St. Ry. Co.
POMEROY, Ohio.	.....	John Blair MacAfee, Vice-Pres. and Gen. Man., Ohio River Elec. Ry. and Power Co.

- POMEROY, Ohio.....W. H. MacAfee, Pur. Agt., Ohio River Elec. Ry. and Power Co.
 " "W. N. Walmsley, Chief Eng., Ohio River Elec. Ry. and Power Co.
- PORT CHESTER, N. Y.G. S. Heft, Sec. and Treas., New York and Stamford Ry. Co.
- PORTLAND, Me.....William R. Wood, Pres., Portland R. R. Co.
 " "Edward A. Newman, Treas. and Gen. Man., Portland R. R. Co.
 " "Charles F. Libby, Gen. Counsel, Portland R. R. Co.
 " "Charles H. Prescott, Dir., Portland R. R. Co.
- PROVIDENCE, R. I...W. E. Elliott, Comptroller, Rhode Island Co.
 " " ...Albert E. Potter, Supt. of Transportation, Rhode Island Co.
- QUINCY, Ill.....H. E. Chubbuck, Gen. Man., Quincy Horse Ry. and Carrying Co.
 " "A. Johnson, Elec., Quincy Horse Ry. and Carrying Co.
- READING, Pa.....Frank L. Fuller, Gen. Man., United Traction Co.
 " "William S. Bell, Sec., United Traction Co.
- ROCHESTER, N. Y...T. J. Nicholl, Vice-Pres., Rochester Ry. Co.
 " " ...C. T. Chapin, Dir., Rochester Ry. Co.
 " " ...J. W. Hicks, Supt., Rochester Ry. Co.
 " " ...A. Green, Mast. Mech., Rochester Ry. Co.
 " " ...J. H. Stedman, Transfer Agt., Rochester Ry. Co.
- ROCKFORD, Ill....R. N. Baylies, Pres., Rockford and Interurban Ry. Co.
 " "T. M. Ellis, Gen. Man., Rockford and Interurban Ry. Co.
 " "F. W. McAssey, Aud., Rockford and Interurban Ry. Co.
 " "John H. Comlin, Dir., Rockford and Interurban Ry. Co.
 " "F. N. Baylies, Supt., Rockford and Interurban Ry. Co.
 " "George W. Knox, Consulting Eng., Rockford and Interurban Ry. Co.
 " "R. M. Heskett, Consulting Eng., Rockford and Interurban Ry. Co.
 " "F. A. Poor, Stockholder, Rockford and Interurban Ry. Co.
- ROCKLAND, Me.....George E. Macomber, Pres., Rockland, Thomaston and Camden St. Ry.
 " "Sidney M. Bird, Vice-Pres., Rockland, Thomaston and Camden St. Ry.
 " "Thomas J. Lynch, Sec., Rockland, Thomaston and Camden St. Ry.
 " "Thomas Hawken, Supt., Rockland, Thomaston and Camden St. Ry.

- ROCKLAND, Me. W. J. Jones, Dir., Rockland, Thomaston and Camden St. Ry.
- SAGINAW, Mich. F. D. Ewen, Treas., Saginaw Valley Traction Co.
- " " P. P. Crafts, Gen. Man., Saginaw Valley Traction Co.
- " " T. B. Redmond, Supt., Saginaw Valley Traction Co.
- SALT LAKE CITY, Utah. W. P. Read, Vice-Pres., Consolidated Ry. and Power Co.
- " " " W. S. Patterson, Mast. Mech., Consolidated Ry. and Power Co.
- SAN ANTONIO, Texas. Reagan Houston, Pres., San Antonio Traction Co.
- " " . . Henry L. Doherty, Eng., San Antonio Traction Co.
- " " . . Paul Doty, Eng., San Antonio Traction Co.
- SAN JUAN, Porto Rico. H. S. Collette, Sec., San Juan Light and Transit Co.
- " " . . C. G. Young, Supt. Construction, San Juan Light and Transit Co.
- " " . . E. L. West., Elec., San Juan Light and Transit Co.
- " " . . S. Gilbert Averill, Dir., San Juan Light and Transit Co.
- SAULT STE. MARIE, Mich. G. W. Chance, Gen. Supt. and Chief Eng., International Transit Co.
- SAVANNAH, Ga. G. O. Nagle, Man., Savannah Elec. Co.
- " " L. A. Bowers, Asst. Treas., Savannah Elec. Co.
- SCHENECTADY, N. Y. John J. Magilton, Aud., Schenectady Ry. Co.
- " " . . J. C. Welch, Elec. Eng., Schenectady Ry. Co.
- " " . . W. J. Floyd, Clerk, Schenectady Ry. Co.
- SCRANTON, Pa. Frank Silliman, Jr., Gen. Man., Scranton Ry. Co.
- SEATTLE, Wash. George W. Dickinson, Man., Seattle Elec. Co.
- " " W. H. Blood, Jr., Elec. Eng., Seattle Elec. Co.
- SIOUX CITY, Iowa. . . . E. L. Kirk, Gen. Man., Sioux City Traction Co.
- SOUTH BEND, Ind. . . . J. McM. Smith, Vice-Pres. and Gen. Man. Indiana Ry. Co.
- " " H. M. Ashenfelts, Supt., Indiana Ry. Co.
- SPRINGFIELD, Ill. . . . T. H. Minary, Gen. Supt., Springfield Consolidated Ry. Co.
- " " T. J. Minary, Dir., Springfield Consolidated Ry. Co.
- SPRINGFIELD, Ohio. . . John H. Miller, Gen. Man., Springfield Ry. Co.
- " " G. A. Mitchell, Mast. Mech., Springfield Ry. Co.
- ST. JOSEPH, Mich. . . . W. Worth Bean, Pres., Benton Harbor and St. Joseph Elec. Ry. and Light Co.
- " " H. C. Mason, Supt., Benton Harbor and St. Joseph Elec. Ry. and Light Co.
- ST. JOSEPH, Mo. John H. Van Brunt, Gen. Man., St. Joseph Ry., Light, Heat and Power Co.
- ST. LOUIS, Mo. G. J. Smith, St. Louis and Suburban Ry. Co.
- " " John Grant, Gen. Supt., St. Louis Transit Co.
- " " C. L. Stone, Asst. Mast. Mech., St. Louis Transit Co.

ST. LOUIS, Mo.....	C. A. Moreno, Chief Eng., St. Louis Transit Co.
“ “	W. O. Mundy, Mast. Mech., St. Louis Transit Co.
“ “	Meile R. Griffeth, Mech. Dept., St. Louis Transit Co.
SYRACUSE, N. Y.....	E. G. Connette, Vice-Pres., Syracuse Rapid Transit. Ry. Co.
TACONY, Pa.....	Frank L. Fuller, Gen. Man., Holmesburg, Tacony and Frankfort Elec. Ry. Co.
“ “	William S. Bell, Sec., Holmesburg, Tacony and Frankfort Elec. Ry. Co.
TAMPA, Fla.....	H. H. Hunt, Man., Tampa Elec. Co.
TERRE HAUTE, Ind..	C. D. Wyman, Man., Terre Haute Elec. Co.
TOLEDO, Ohio.....	Albion E. Lang, Pres., Toledo Rys. and Light Co.
“ “	L. E. Beilstein, Vice-Pres. and Gen. Man., Toledo Rys. and Light Co.
“ “	E. O. Reed, Aud., Toledo Rys. and Light Co.
“ “	J. F. Collins, Supt., Toledo Rys. and Light Co.
“ “	E. J. Bechtel, Elec. Eng., Toledo Rys. and Light Co.
“ “	Charles Munz, Pur. Agt., Toledo Rys. and Light Co.
“ “	Joe Young, Pass. Agt., Toledo Rys. and Light Co.
“ “	Joe Enright, Asst. Supt., Toledo Rys. and Light Co.
“ “	William Long, Chief Eng., Power Station, Toledo Rys. and Light Co.
“ “	E. Kuney, Asst. Elec. Eng., Toledo Rys. and Light Co.
“ “	C. A. Brown, Mast. Mech., Toledo Rys. and Light Co.
TOPEKA, Kan.....	A. M. Patten, Topeka Ry. Co.
TORONTO, Can.....	James C. Grace, Sec. and Treas., Toronto Ry. Co.
“ “	Edward H. Keating, Gen. Man., Toronto Ry. Co.
“ “	W. H. Moore, Sec. to Pres., Toronto Ry. Co.
“ “	Robert C. Brown, Consulting Eng., Toronto Ry. Co.
“ “	M. Power, Mast. Car Builder, Toronto Ry. Co.
“ “	W. H. Nix, Head Roadmaster, Toronto Ry. Co.
“ “	G. H. Sweetlove, Armature Dept., Toronto Ry. Co.
“ “	D. Sutherland, Mech. Dept., Toronto Ry. Co.
“ “	A. M. Smith, Motor Dept., Toronto Ry. Co.
“ “	H. Cowan, Track Dept., Toronto Ry. Co.
TRENTON, N. J.....	Frank L. Fuller, Gen. Man., Trenton St. Ry. Co.
“ “	William S. Bell, Sec., Trenton St. Ry. Co.
UTICA, N. Y.	C. Loomis Allen, Gen. Man., Utica and Mohawk Valley Ry. Co.
“ “	A. L. Linn, Jr., Asst. Sec. and Treas., Utica and Mohawk Valley Ry. Co.
“ “	Paul T. Brady, Dir., Utica and Mohawk Valley Ry. Co.
VENICE, Ill.....	Fred E. Allen, Pres., Granite City and St. Louis Ry. Co.
“ “	Arthur S. Partridge, Granite City and St. Louis Ry. Co.

WASHINGTON, D. C.	George H. Harries, Vice-Pres., Washington Ry. and Elec. Co.
"	" ..W. F. Ham, Comptroller, Washington Ry. and Elec. Co.
WEBB CITY, Mo.	W. S. Gunsalus, Supt., Southwest Missouri Elec. Ry. Co.
WHEELING, W. Va.	Paul O. Reymann, Pres., Wheeling and Elm Grove R.R. Co.
"	" ...W. A. Shirley, Sec. and Treas., Wheeling Traction Co.
"	" ...C. E. Flynn, Gen. Man., Wheeling Traction Co.
"	" ...H. L. Kerr, Supt., Wheeling Traction Co.
WICHITA, Kan.	S. L. Nelson, Gen. Man., Wichita R. R. and Light Co.
"	"W. R. Morrison, Supt., Wichita R. R. and Light Co.
WILKESBARRE, Pa.	Frank L. Fuller, Gen. Man., Wilkesbarre and Wyoming Valley Traction Co.
"	" ..William S. Bell, Sec., Wilkesbarre and Wyoming Valley Traction Co.
WILMINGTON, Del.	Frank L. Fuller, Gen. Man., Wilmington City Ry. Co.
"	" ...William S. Bell, Sec., Wilmington City Ry. Co.
WORCESTER, Mass.	J. W. Lester, Treas., Worcester Consolidated St. Ry. Co.
"	" ..R. T. Laffin, Gen. Man., Worcester Consolidated St. Ry. Co.
"	" ..William Pestell, Supt. of M. P. and Machinery, Worcester Consolidated St. Ry. Co.
YOUNGSTOWN, Ohio.	A. A. Anderson, Gen. Man., Mahoning Valley Ry. Co.
"	" ..W. C. Smith, Gen. Supt., Mahoning Valley Ry. Co.
"	" ..M. E. McCaskey, Supt., Mahoning Valley Ry. Co.
"	" ..E. R. Larter, Supt. of Shops, Mahoning Valley Ry. Co.

REPRESENTATIVES OF NON-MEMBERS.

(ARRANGED ALPHABETICALLY ACCORDING TO CITIES.)

Companies not members of the Association were represented as follows:

ALLIANCE, Ohio.	A. S. Van DeMark, Alliance St. Ry. Co.
AMSTERDAM, N. Y.	Julian Du Bois, Supt., Amsterdam St. R. R. Co.
BANGOR, Me.	Louis Pfingst, Bangor St. Ry.
"	"W. H. Snow, Supt. of Operation, Bangor, Hampden and Winterport Ry. Co.
BLOOMINGTON, Ill.	C. H. Robinson, Chief Elec., Bloomington and Normal St. Ry. Co.
BUFFALO, N. Y.	A. M. Bannister, Buffalo & Rochester Trunk Line R. R.
CHARLESTON, W. Va.	William W. Lindsay, Charleston Traction Co.
CHICAGO, Ill.	Charles L. Hull, Chicago General Ry. Co.
"	"Warren Bicknell, Sec., Aurora, Elgin and Chicago Ry. Co.

- CHICAGO, Ill.....Ernest Gonzenbach, Elec. Eng., Aurora, Elgin and Chicago Ry. Co.
- “ “Ed. J. Hunt, Aurora, Elgin and Chicago Ry. Co.
- CINCINNATI, Ohio....George Bender, Chief Elec., Cincinnati, Lawrenceburg and Aurora Elec. St. R. R. Co.
- “ “J. M. Wilson, Cincinnati, Milford and M. Traction Co.
- CLEVELAND, Ohio...F. A. Little, Chief Eng., Miami and Erie Canal Transportation Co.
- “ “ ...W. J. Hillier, Supt., Cleveland, Elyria and Western Ry. Co.
- “ “ ...F. L. Fuller, Sec., Cleveland and Southern Ry. Co.
- DETROIT, Mich.....Orrin J. Price, Pres., Detroit, Pontiac, Lapeer and Northern Ry. Co.
- “ “W. S. Parker, Detroit, Pontiac, Lapeer and Northern Ry. Co.
- ERIE, Pa.....A. C. Harrington, Man., Erie Rapid Transit St. Ry. Co.
- GREEN BAY, WIS....Charles F. Goodrich, Supt., Fox River Elec. Ry. and Power Co.
- INDIANAPOLIS, Ind...J. W. Chipman, Indianapolis and Eastern Traction Co.
- LIMA, OhioF. D. Carpenter, Gen. Man., Western Ohio Ry. Co.
- LOGANSPOUT, Ind...E. C. Folsom, Man., Wabash-Logansport Traction Co.
- LORAIN, Ohio.....T. C. Cherry, Gen. Man., Lorain St. Ry. Co.
- MANSFIELD, Ohio...Arthur J. Haycox, Supt., Citizens Elec. Ry. Co.
- MARION, Ill.....Denis Ayer, Man., Coal Belt Elec. R. R. Co.
- MICHIGAN CITY, Ind.A. A. Boyd, Lake Cities' Elec. Ry. Co.
- MIDDLEBORO, Mass..Charles H. Cox, Supt., Middleboro, Wareham and Buzzard's Bay St. Ry. Co.
- MIDDLETOWN, N. Y..J. W. Sloat, Middletown-Goshen Traction Co.
- MOLINE, Ill.....John Balch Blood, Moline, East Moline and Watertown Ry. Co.
- PHILADELPHIA, Pa..A. E. Meixell, Supt., Fairmount Park Transportation Co.
- “ “ ..John H. Clevensline, Fairmount Park Transportation Co.
- PORT HURON, Mich..E. M. Thomas, City Elec. Ry. Co.
- POUGHKEEPSIE, N. Y. John L. Hinkley, Poughkeepsie City and Wappingers Falls Elec. Ry. Co.
- SELMA, Ala.....John F. Knowlin, Chief Elec., Selma St. and Suburban Ry. Co.
- SYRACUSE, N. Y....W. B. Rockwell, Gen. Man., Syracuse, Lakeside and Baldwinsville, Ry.
- TIFFIN, Ohio.....A. Kaup, Supt., Tiffin, Fostoria and Eastern Elec. Ry. Co.
- “ “C. S. Everington, Elec., Tiffin, Fostoria and Eastern Elec. Ry. Co.
- TOLEDO, Ohio.....M. H. Griffin, Toledo and Indiana Ry. Co.
- “ “John S. Files, Toledo and Indiana Ry. Co.

TOLEDO, Ohio.....	C. A. Denman, Toledo and Lima Traction Co.
“ “	F. E. Seagrave, Sec., Toledo and Western Ry. Co.
“ “	Charles F. Franklin, Gen. Man., Toledo and Western Ry. Co.
“ “	Charles E. French, Aud., Toledo and Western Ry. Co.
“ “	J. S. Clark, Pur. Agt., Toledo and Western Ry. Co.
“ “	F. H. Froehlich, Toledo and Western Ry. Co.
“ “	F. B. Perkins, Toledo and Western Ry. Co.
WASHINGTON, Pa....	James Kent, Supt., Washington and Canonsburg Ry. Co.
WINDSOR, Ont.....	William J. Pulling, Sandwich, Windsor and Amherst- burg Ry.
WINNIPEG, Manitoba.	W. Phillips, Supt., Winnipeg Elec. St. Ry. Co.
YOUNGSTOWN, Ohio..	Godfrey Morgan, Gen. Supt., Youngstown and Sharon St. Ry. Co.

TRADE PAPERS.

Representatives of the technical press were in attendance at the meeting as follows :

AMERICAN ELECTRICIAN.

Charles K. Thomas.

CANADIAN ENGINEER.

E. B. Biggar.

ELECTRICAL REVIEW.

Stephen H. Goddard.

Charles W. French.

Fred. E. Colbert.

Philip S. Dodd.

ELECTRICAL WORLD AND ENGINEER.

T. C. Martin.

James M. Wakeman.

ENGINEERING NEWS.

E. E. Russell Tratman.

POWER.

S. W. Hume.

RAILWAY AGE.

Hugh M. Wilson.

John N. Reynolds.

RAILWAY REVIEW.

Willard A. Smith.

STREET RAILWAY JOURNAL.

Henry W. Blake.

J. B. O'Hara.

W. K. Beard.

A. C. Shaw.

C. A. Babbiste.

Roy N. Berry.

Harold S. Buttenheim.

H. B. Abbott.

James R. Cravath.

STREET RAILWAY REVIEW.

Fred. S. Kenfield.
C. B. Fairchild, Jr.
William Padget.

Daniel Royse.
W. G. Thomas.
A. C. Willis.

H. J. Kenfield.
George H. Barnes.
J. H. Barnes.

WESTERN ELECTRICIAN.

William E. Keily.

Frank L. Perry.

C. G. Whitney.

OFFICIAL STENOGRAPHER.

T. E. Crossman.

OTHER ATTENDANTS.

The following named gentlemen were also present:

William T. Benallack, State Electrical Inspector, Detroit.

W. Elwell Goldsborough, Chief of Dept. of Electricity, Louisiana Purchase Exposition, St. Louis.

Albert L. Judson, Accountant, Board of Railroad Commissioners, Albany N. Y.

Charles P. King, Philadelphia Commercial Museum, Philadelphia.

N. C. Keeran, Wabash Railroad Co., Chicago.

Edwin B. Katte, Mechanical Engineer, New York Central Railroad Co., New York.

Ira A. McCormack, Div. Supt., New York Central Railroad Co., New York.

A. H. Smith, Gen. Supt., New York Central Railroad Co., New York.

Willard A. Smith, Louisiana Purchase Exposition, St. Louis.

William U. Stuart, United States Census Bureau, Washington.

W. W. Wheatly, Brooklyn, New York.

MINUTES OF THE LAST MEETING.

President Vreeland—The next order of business is the reading of the minutes of the last meeting, and unless objection is made the minutes will stand approved as printed. (No objection.)

We now extend an invitation to those companies represented at this meeting which do not belong to our Association, to join us if there be any here of that class; or, if the representatives of such companies have not time to do this at present, they can do so later by applying to Secretary Penington.

NEW MEMBERS.

(ARRANGED ALPHABETICALLY ACCORDING TO CITIES.)

The following companies acquired membership just prior to or during the meeting:

ANDERSON, Ind.....Union Traction Company of Indiana.
BOSTON, Mass.....Boston and Worcester Street Railway Company.
CHICAGO, Ill.....Northwestern Elevated Railroad Company.
DEKALB, Ill.....DeKalb and Sycamore Electric Railroad Company.
DETROIT, Mich.....Detroit, Ypsilanti, Ann Arbor and Jackson Railway Company.
DETROIT, Mich.....Grand Rapids, Grand Haven and Muskegon Railway Company.
DETROIT, Mich.....Rapid Railway System.
GREENBURG, Pa.....Pittsburg, McKeesport and Greenburg Railway Company.
HUNTINGTON, W. Va.Camden Interstate Railway Company.
INDIANAPOLIS, Ind...Indianapolis, Lebanon and Frankfort Traction Co.
MENOMINEE, Mich...Menominee Electric Light Railway and Power Company.
NORTH ADAMS, Mass.Hoosac Valley Street Railway Company.
OSHKOSH, Wis.....Winnebago Traction Company.
S'LT STE. MARIE, Ont.The International Transit Company.
WICHITA, Kas.....Wichita Railroad and Light Company.

LETTERS OF REGRET.

President Vreeland—A number of gentlemen, who have been active in the affairs of the Association, have found it impossible to be present at this meeting, and have sent letters of regret, which the Secretary will read.

The Secretary read the following letters:

Pittsburg, Pa., Oct. 9, 1902.

Mr. H. H. Vreeland, President American Street Railway Association,
Detroit, Mich.

My Dear Sir—I am in receipt of your very kind invitation of the 2d instant to attend the meeting of the American Street Railway Association in Detroit. It would indeed give me a great deal of pleasure to meet with the Association again, and I greatly appreciate your kind invitation. It is out of the question at present for me to accept on account of my business engagements. It is great pleasure to be remembered by the Association and it recalls many very pleasant acquaint-

ances, and as I have before stated I would like very much to meet many of them again.

With many thanks for your kind invitation, I am,

Yours very truly,

JOHN G. HOLMES.

(Telegram.)

Kansas City, Mo., Oct. 8, 1902.

H. H. Vreeland, President American Street Railway Association, Light Guard Armory, Detroit.

The kind invitation of the Association through you to be present at its Detroit Meeting is acknowledged. I had hoped I could attend, but urgent business prevents. In presenting my sincere regrets please assure the members of my esteem and best wishes for the most successful meeting in the Association's history. I cherish my honors from the Association as one of the most delightful episodes of my life, with thanks and highest regards for yourself and my former associates.

WALTON H. HOLMES.

Chicago, Oct. 6, 1902.

Mr. H. H. Vreeland, President American Street Railway Association.

My Dear Sir—Please accept my thanks for the courtesy of a personal invitation to attend the meeting of the American Street Railway Association. If I stay at home I can send you a large delegation, which I shall do, and thus perform a more patriotic duty to the Association.

With best wishes for the pleasure and profit of the meeting, both of which are already assured, I am,

Sincerely yours,

ROBERT McCULLOCH.

Mr. H. H. Vreeland, President American Street Railway Association, Detroit, Mich.

Washington, D. C., Oct. 3, 1902.

My Dear Sir—I am in receipt of your favor of the 2d instant, extending to me an invitation to be present on the occasion of the Twenty-first Annual Meeting of the American Street Railway Association to be held in Detroit on October 8th, 9th and 10th, 1902.

I regret exceedingly that my engagements are such that I shall not be able to be with you on that occasion. Kindly convey my compliments to the members of the Association and to such of my old friends as you may meet.

Thanking you for your kind letter, I am,

Very truly yours,

H. C. PAYNE.

Chicago, Oct. 7, 1902.

Mr. H. H. Vreeland, President American Street Railway Association,
Detroit, Mich.

Dear Sir—I regret very much that I will be unable to attend the Convention on account of the Board of Arbitration being in session this week, at which I am in daily attendance. I expected to be present and avail myself of the benefit of this convention, which is of great importance in conducting large enterprises similar to those in which most of us are engaged.

Hoping that this convention will eclipse all former conventions,
I am,
Yours truly,

J. M. ROACH.

Boston, Mass., Oct. 3, 1902.

Mr. H. H. Vreeland, President American Street Railway Association,
Detroit, Mich.

Dear Sir—I thank you sincerely for your cordial invitation of the 2d instant to attend the Twenty-first Annual Meeting of the American Street Railway Association. My interest in the Association and its prosperity has not diminished; nevertheless, I find it impossible this year to attend the Convention, as I have just returned from a long absence. Our company will, however, be adequately represented, and I sincerely trust that the Convention may be both profitable and enjoyable.

Yours very truly,

C. S. SERGEANT.

President Vreeland—On behalf of the Executive Committee and the officers of the Association I desire to express our thanks for the large and representative attendance we have this morning on the opening exercises of the convention. This is certainly a larger attendance at this hour of our first day's meeting than I have ever seen in the many conventions I have attended.

It devolves upon the President each year to deliver what is known as the President's address. For the first time in addressing a body of railroad men I am going to read that address. There are some points connected with it that are rather novel in connection with the work of a street railway association. There will undoubtedly be selections made from it by the Press, without the context in some cases, to shade some of the points, and I want to be careful in what I say. A gentleman

who is connected with the Press in a large way, who happened to read my address the other day, said: "If you ever expect to run for Governor of the State of New York or President of the United States, do not read that address."

ADDRESS OF THE PRESIDENT.

The American Street Railway Association—

Gentlemen: It is exceedingly appropriate that the Twenty-first Annual Meeting of the American Street Railway Association should be held in the beautiful city of Detroit, for, while the city street railways of the country have not been idle during the last year, the greatest development in electric railway work since our last Convention, and, in fact, for several years, has been in the direction of interurban electric railways, and in this class of road Detroit railway enterprise has always been prominently identified. Radiating from this city can be found some of the largest and most modern of interurban railways, and Detroit ranks with Cleveland, Indianapolis, Cincinnati and Dayton as the important centers in this country of the interurban railway industry. It is connected by high-speed electric railways with Port Huron on the north and Toledo and Cleveland on the south and east, while the lines to the west extend with only a slight break as far as the eastern shore of Lake Michigan, and will probably before long find entrance into Chicago.

The interurban railways have long since passed the stage when they could be considered simply as suburban extensions of city lines. They are doing a through business, which is constantly growing, and the later and more ambitious examples of roads of this class are built with a track construction inferior in no respect to the best practice of the steam railroad companies. They operate usually for the greatest part of their distance over private rights-of-way, and attain speeds which enable them to compete successfully with their steam-railroad rivals for nearly every class of traffic except long-distance passenger and freight business. This extension of the electric railway has introduced new problems of discussion, such as fares, transportation of freight, etc., into the operating department, as well as the exercise of the most advanced electrical engineering methods, not only in the transmission of the power at high voltage necessary to operate the cars, but in the car equipment as well. Up to the present, direct current has been used on the trolley wire or third rail, but if the experiments with single-phase motors, which it is announced are soon to be tried, prove successful, the possibility of the direct application of alternating current to railway work will remove some of the inconveniences which now exist in the present system.

I will not take the time of the convention to give the statistics showing the advances made in street railroading during the last year. Some of them will be brought out in the papers to be read, and statistics on the subject are published in the technical press from time to time. It is interesting in passing to note, however, that eleven years ago there were about 1,800 miles of electric railways in the country, while to-day there are between 24,000 miles and 25,000 miles, and that against an investment eleven years ago in street railways of about \$75,000,000, the total capital invested to-day is in the neighborhood of two billion dollars. These figures show that the time has come when we should no longer apologize for our existence, but should take a stand individually and as an Association for the protection of our rights as a corporation.

It is a venerable saying that corporations have no souls, and, perhaps, the credit that has attached to this aphorism accounts for the evident belief of the public that they have no feelings. We are here as members and managers of a class of corporations which is more intimately related than any other to the comfort, convenience and success of the people who live in cities and towns. Upon the orderly operation of a street railroad depends substantially everything else that goes on in a thickly settled community. It is true that what we are operating is a valuable privilege granted by the public, but its value depends chiefly upon the sufficiency with which the public is served, and the public was moved to grant it solely from considerations of its own comfort and interest. The contract between the public and the street railroads, therefore, is a contract of partnership and the interest of the partners is identical. What the public wants is the best possible service, and only by giving the best possible service can we obtain the largest possible returns for our money.

And yet, despite this close association of interest, it is the experience of all of us that there is scarcely any limit to the impositions which the public will permit, and rather cheerfully permit, to be laid upon street railway corporations. Legislatures and boards of aldermen seem to regard street railroads as fair game to be hit at as often and as viciously as anybody chooses, and the public newspapers, so far from taking into account the service we are rendering and protecting us against the schemes of demagogues, are rather inclined to regard injuries so inflicted with amused indifference, if not with positive favor.

In every other form in which property manifests itself, except in shares of corporate stock, it has well-defined rights and valuable privileges. One thousand dollars invested in bank notes or government bonds, or even in real estate mortgages, are surrounded with legal safeguards to maintain their value, and if the hand of the

despoiler for one moment seems to menace them everybody begins to talk about the sacred rights of property. That is just as it should be. But money lent to the government at a comfortable rate of interest is no more directly employed upon the public business than that which is represented by the stock of a street railroad, and it is no answer to the claim that it ought to have fair treatment, that it ought not to be the object of special prejudice and attack to say that it is particularly valuable. Its value is strictly measured by the public service it renders. The contract, of which our charters and certificates of incorporation are the witnesses authorizes us, as the universal law of business authorizes every one, so to employ our abilities and resources as to obtain from them the greatest possible result to ourselves, and if, in recent years, street railroad shares have been especially good income earners, it is because the street railroad companies are meeting the public ends for which they were organized, because they have studied and facilitated the public interests and needs, because they have put themselves in advance of the development of the cities and towns they run through, because at vast expense they have introduced new methods, new machinery, swifter, more frequent and improved accommodations, and it has never been laid down by the courts that a contract could be broken and new conditions imposed because either of the parties to it had done better than was anticipated, and certainly not because both had. And yet the contracts between the public and the street railroad companies are being continually infringed upon by the imposition of new taxes and new requirements, and it has come to be considered almost an impertinence for a corporation so injured to offer ever so mild a protest.

In the theory of the law a corporation is an individual, but apparently only for the purpose of enabling it to be got at. It has all the obligations of individuals, but of their rights few. The politicians of all parties talk themselves hoarse with eloquent protestations of their love of individual liberty and individual rights, and so well have their laws justified these pretensions that no man in this country is so idle, so worthless, so bereft by his own acts of character, property or position but that if he contrives to keep out of prison he has a vote and the opportunity of making his equal influence felt in the determination of public questions. But a corporation, even such a corporation as is organized to serve the public convenience, may neither vote nor in any other way participate in making the laws by which it must be bound. The proposition before the public on which an election is to be held and a policy defined for future legislation, may be one which vitally concerns the interests, even the life, of a corporation, but if it were to undertake to express

its views from a public platform or to influence the votes even of those persons who derive their means of livelihood from its operations, the very foundations of social order would seem to be attacked. It must stand by on such occasions in submissive silence. It must affect an attitude of indifference, and if it does not actually proclaim to its employes their title to vote as they please, it becomes at once the object of suspicion and prejudice.

Wars have been fought and governments formed to vindicate the principle that there shall be no taxation without representation, but if a corporation should ask to be represented in a public body that had the power of taxation and was proposing to exercise it upon corporations, its action would be observed with indignation and amazement. Even in the courts its standing is prejudiced, and before a jury sworn to render an impartial verdict upon the facts, its first and constant care is to remove from the minds of the jurymen a frankly admitted antagonism.

It is not remarkable that in this situation the law should discriminate against corporations. The failure to assert rights when they are threatened is always taken as a confession that they do not exist, and encroachment follows encroachment with ruthless certainty. Timid counsels have so far prevailed among the street railroad companies in the adjustment of their affairs with the public that in many States there is a gross discrimination in the taxing laws against such corporations. When by Federal legislation it was proposed to tax the incomes of individuals, although a limit was placed which protected the poorer classes, public protest made itself felt so powerfully that the Supreme Court of the United States, after holding that an income tax was lawful, proceeded to reverse itself and to find constitutional objections that absolutely killed the income tax law. And yet an income tax upon the earnings of corporations is found upon the statute books of many of our American commonwealths, and corporations with which a State has made definite contracts fixing and limiting the obligations on either side are required, notwithstanding these contracts, to pay other and additional taxes upon their gross earnings.

When money is invested in a public franchise upon terms and conditions expressed in a charter or a certificate of incorporation under a general act, the shareholders have a moral, and it ought to be a legal, right to understand that what they are to pay and to do in making their franchise effectual is nothing more than or different from the conditions of which they had notice and to which they agreed. The rule that there can be no impairment of the obligations of a contract is to be found in the fundamental law of the United States and of every State, and in controversies between individuals

no constitutional guarantee is more carefully protected by the courts. And in a contract between the State and a corporation there is no trouble about holding the corporation. If it violates its contracts, or if it does not give the promised service or duly make the promised payments, the Attorney-General is authorized to institute proceedings for its dissolution. But the rule of performance does not work both ways. It appears to bind only the corporation. The State can pass new laws imposing new conditions and the corporation will have its pains for its protest.

I look forward to the day when the shareholders in street railway corporations will stand up for their rights as shareholders in the same sturdy spirit which they would at once bring to the defense of their rights as individuals. The great street railway properties of this country, and even the little ones, are no longer in the hands of a few rich men. They are distributed in hundreds of thousands of shares ranging in par value from five dollars to a hundred dollars among a countless body of people. The heads of these properties are no longer in any material degree their owners. They are, and are coming more and more to be, simply the salaried employes of a great number of shareholders. They conduct the business of these properties as a trust, and they have nothing to do with the stock market. Their one concern is to earn a dividend for their shareholders and pay it where it belongs. Every shareholder is as much interested to protect the property against unjust discriminations in the laws and to protect its reputation as a business organization as are any of us who are placed for the time being in charge of the property. It is no less their duty than it is ours to insist that public officials shall treat these corporations equitably and honestly.

It will not be denied that inasmuch as our opportunity to earn money proceeds out of a public privilege we should pay to the public a fair return for what we get. But what we give in the way of service and what it costs us to give it are elements just as much entitled to consideration in the making of the contract as any other; and when the contract is once made it ought to be as little subject to repudiation or change as any other contract. The faithful discharge of our obligations requires a continually increasing investment, the constant incurring of new risks. It is not enough that we shall meet the demand as it exists from day to day; it is necessary that we should anticipate it. And if the profits upon our investment prove in the end to be considerable, that is the reward to which intelligent foresight, courage and good management are always entitled. The spirit that seeks to confiscate anybody's legitimate earnings is unfair and reprehensible, and honest-minded men should be strong to oppose it.

This association has served an honorable and useful purpose for twenty-one years, but the time may be at hand when the scope of its usefulness can be materially increased. I have already pointed out the injustice which is done corporations by municipalities and the need for public enlightenment, not only on the equity of their cause, but also on the service which they are rendering the public. There is one other point to which, however, I would like to direct your attention, and that is in connection with the broader field of electric railroading which this country will certainly see during the next decade.

I have already referred to the immense mileage of interurban electric railways which has been built during the last few years, especially in the Middle West. Many of these roads are hauling freight, and it is a matter of great importance, not only to these roads themselves, but to the cities and towns which they serve, that the facilities which they should enjoy as regards the interchange of freight with the steam railroads should be as free as those between the steam railroads themselves. The first point requisite to this end is to have convenient connections with the neighboring steam railroads, so that the freight cars can be passed from one to the other. The right of the electric company to demand this has only recently been decided in New York State in a case which was contested between the Hudson Valley Railway Company and the Boston & Maine Railroad Company, in which the Court of Appeals reversed the decision of the Appellate Division and rightly decided that an intersection and connection of the electric road and the steam road should be made in the interests of the local shippers. This right should be of great advantage to the electric railroad company, but the full benefit to the local shippers will not be derived until the full privileges of an interchange of freight cars between the two systems shall be as universally recognized as they now are between steam railroads, so that freight can originate on either the steam or electric road. Heretofore in many cases the steam railroad companies have shown an unwillingness to interchange freight with the competing electric roads, on the plea that the latter were not responsible in the same degree as the steam railroads, and by this means considerable freight transportation has been diverted from the electric railroad.

The points just mentioned indicate the broader problems which are being forced upon the electric railway interests of the country, through the large increase in interurban electric railway companies, which naturally look to this Association as the exponent of their interests. This is only natural, because while these lines do not operate upon the streets, the electrical equipment problems connected therewith, as well as many of the other questions which arise in connection with their operation, are the same as those which interest

"street railway" managers proper. And while it may appear inadvisable to change the name of the American Street Railway Association to accord with the broader field of electric railroading in which many of its members are engaged, it should be understood that the Association is not merely a street railway organization, but its scope covers the entire field of electric railway transportation. More than this, it may seem desirable to welcome the participation of all companies engaged in electric railway transportation, for the reason that there is no organization in the country which has accomplished so much, or at its annual conventions and exhibitions can afford anywhere near the same opportunity for instruction to those interested in electric transportation in its different phases. Heretofore no manager or engineer of a trunk line company which is contemplating or has installed a system of electric traction could join this Association except as a representative of some street railway company; but in view of the interest which is being taken in electric railway equipment by some of the large trunk line interests and the undeniable future which electric power will have for such transportation, especially for terminal and suburban work, the question will arise in the near future, if it has not already done so, whether the benefits which this Association can confer are available for companies which are not now eligible to membership.

I will not attempt to suggest an answer to this question, but all signs indicate that it will be an important one during the next few years, if it is not so already.

Mr. N. H. Heft, Meriden—I move that the thanks of this Association be tendered to our President for his able and courteous address, that it be spread upon the minutes, and that the Secretary be instructed to have the address printed, and that each member of the Association be furnished with several copies.

Secretary Penington put the motion, which was carried.

President Vreeland—Gentlemen, I thank you for that expression, on behalf of the Association. Those of you who are connected with electric railroads in the Eastern section of the country have heard expression of such sentiments from me a number of times and to that point. I felt that it was a duty I owed to the street railway interests of the United States to take a stand on this question as I did in the East a few months ago. The problem we have confronting us, as I have indicated in the address, is not the problem that confronted the

managers of street railroads ten years ago. The man who ran a street railroad at that time usually owned a large part of the capital stock and dictated its policy with his hand on his pocketbook. The policies of the street railroads of to-day are dictated by men who are technically and scientifically educated in the methods of management, control and operation of these large corporations. The character of the service which is rendered to the public throughout the country, the development going on in the hands of men who have nothing to do with the financial questions connected with the property, is what has brought the electric railroad properties up to their present state. The electric railroad system has no history back of it. The man who works in this field is a pioneer, whether he is an operating manager, or the electrical engineer or mechanical engineer. He has no literature to go to from which to gather information relating to the operation of these systems; all experience in connection with this work must be obtained by hard work, and the hard knocks that come from the actual operation of these properties. That electric railroading has advanced to the stage in the world's transportation affairs that it represents to-day, particularly in the United States and Canada, is an evidence of how hard we have worked and how well directed our efforts have been, and how ably we have been supported by the great electrical and mechanical equipment companies in this country. They have spared no expense and no pains in the developments which have had to do with the success of our industry, and it is but fair to them to say in the Convention that they have had just as much to do with placing the electric railway on the high pinnacle of advancement it occupies to-day as any distinctly operating or mechanical men in the country. Gentlemen, I thank you.

The next order of business is the report of the Executive Committee.

REPORT OF THE EXECUTIVE COMMITTEE.

The Secretary read the report as follows:

To the American Street Railway Association—

Gentlemen: The report of your Executive Committee will consist, as in past years, of the minutes of the several meetings held during the year, which will show what has been done by your committee.

MINUTES OF SPECIAL MEETING OF THE EXECUTIVE
COMMITTEE, HELD AT THE CADILLAC HOTEL,
DETROIT, MICH., MONDAY, FEBRU-
ARY 24, 1902.

The President called the meeting to order at 10 a. m.

Present: Herbert H. Vreeland, President; Charles W. Wason, First Vice-President; Elwin C. Foster, Second Vice-President; H. M. Sloan, Third Vice-President; Walton H. Holmes, Daniel B. Dyer, T. J. Nicholl, George W. Dickinson, and T. C. Penington, Secretary-Treasurer.

The Secretary read a letter from John A. Rigg regretting his inability to be present, as an important matter compelled him to remain at home.

The Secretary-Treasurer presented a financial report of the condition of the Association to date, also a list of members in arrears for dues, and amount of space rental at New York unpaid.

Upon motion of Mr. Wason, the report was placed on file.

The Secretary stated that the President, on November 29, 1901, appointed the following gentlemen a Committee on Standards for the ensuing year:

N. H. Heft, New Haven, Conn.

E. G. Connette, Syracuse, N. Y.

C. F. Holmes, Kansas City, Mo.

John I. Beggs, Milwaukee, Wis.

E. A. Newman, Portland, Me.

R. T. Laffin, Worcester, Mass.

Will Christy, Akron, Ohio,

all of whom had accepted.

The renewal of the Treasurer's bond issued by the American Surety Company of New York in the amount of Ten Thousand Dollars (\$10,000.00), renewed to February 1, 1903, was presented to the committee by that officer and placed in the possession of the President.

Mr. Sloan moved that the salary of the Secretary-Treasurer be continued at \$1,500.00 per annum, as in previous years.

Carried.

Mr. Dyer moved that the payment of the admission fee of \$25.00 be waived to any company becoming a member of the Association prior to October 1, 1902, provided the annual dues of \$25.00 to October, 1902, be paid at the time application for membership is made.

Carried.

Mr. Swart, of the Cadillac Hotel, appeared before the committee and stated that the regular rates would prevail during the meeting, making the suggestion that two persons occupy one room, if possible.

At this point a recess was taken for luncheon and for the purpose of visiting the Armory, where it was proposed to hold the Convention.

After visiting the hall and other hotels with the local committee, the committee reconvened at 2:30 p. m.

Mr. Wason moved that the twenty-first annual meeting of the Association be held in the Light Guard Armory, Detroit, on Wednesday, Thursday and Friday, October 8, 9 and 10, 1902; that two sessions of the Convention be held on the 8th and 10th; that the 9th be set aside for the inspection of the exhibits and that the banquet be held on the evening of the 10th.

Carried.

Mr. Dickinson moved that the price of space be ten cents per square foot, as heretofore.

Mr. Holmes moved that the Cadillac Hotel be selected as the headquarters of the Association and that no rooms be assigned prior to April 15; the assignment to be made under the supervision of the local committee, preference to be given to representatives of members of the Association.

Mr. Foster moved that the papers be printed in advance of the Convention, and copies sent to each member of the Association at least two weeks previous to the meeting, and that the President be authorized to select a speaker to open the discussion on each paper.

Carried.

The following subjects were selected on which papers should be written and presented to the Association:

"The Registration of Transfers"—Mr. C. D. Meneely, Secretary and Treasurer Brooklyn Heights R. R. Co., New York.

"Benefit Associations"—Mr. Oren Root, Jr., Assistant General Manager Metropolitan St. Ry. Co., New York.

"Steam Turbine Engines"—Mr. E. H. Sniffin, New York.

"Discipline of Employes by the Merit System"—Mr. W. A. Satterlee, General Superintendent Metropolitan St. Ry. Co., Kansas City, Mo.

"The Transportation of Light Express and Parcel Delivery"—Mr. George W. Parker, General Express Agent Detroit United Ry., Detroit, Mich.

"Signals for Urban and Interurban Railways"—Mr. G. W. Palmer, Electrical Engineer Old Colony St. Ry., Fall River Mass.

"The Adjustment of Damage Claims"—Mr. M. B. Starring, Assistant General Counsel Chicago City Ry. Co., Chicago.

Mr. Wason moved that the exhibits remain under the charge of the Association as heretofore, and that the Executive Committee recommend to the Association that no change be made.

Carried.

On motion of Mr. Holmes, the following gentlemen were appointed by the President as a standing Committee on Rules for the Government of Employees:

J. C. Brackenridge, General Manager Brooklyn Heights R. R. Co., Brooklyn, N. Y.

E. C. Foster, Vice-President and General Manager Old Colony St. Ry. Co., Boston, Mass.

T. E. Mitten, General Manager International Traction Co., Buffalo, N. Y.

W. E. Harrington, Vice-President and General Manager Camden & Suburban Ry. Co., Camden, N. J.

Mr. Nicholl moved that the President and Secretary be authorized to perform any necessary work that would properly devolve upon the Executive Committee between the present time and the next meeting.

Carried.

Mr. Foster moved that the Secretary be directed to request the chief executive officer of the different companies to notify delegates and heads of departments attending the Convention for the companies they represent, that they will be expected to attend each session and take part in the discussions.

Carried.

Mr. Sloan moved that a vote of thanks be extended to Mr. Hutchins, Mr. Stanley, Mr. Fullerton, Mr. Fry and others for the courtesies extended to the committee during the present meeting.

Carried.

On motion, adjourned, subject to call of the Chair.

MINUTES OF SPECIAL MEETING OF THE EXECUTIVE
COMMITTEE, HELD AT THE CADILLAC HOTEL,
DETROIT, MICHIGAN, TUESDAY, OCTOBER 7, 1902.

The President called the meeting to order at 12:30 p. m.

Present: Herbert H. Vreeland, President; Charles W. Wason, First Vice-President; Elwin C. Foster, Second Vice-President; H. M.

Sloan, Third Vice-President; Daniel B. Dyer, T. J. Nicholl, George W. Dickinson, and T. C. Penington, Secretary-Treasurer.

Minutes of the meeting held February 24, 1902, were read and approved.

The Secretary-Treasurer presented his annual report.

The President appointed Messrs. Wason and Dyer an Auditing Committee to examine the accounts of the Treasurer.

The Auditing Committee reported the accounts of the Treasurer in proper form, and supported by proper vouchers.

Mr. Foster moved that the report of the Secretary-Treasurer be approved.

Carried.

The President appointed Messrs. Foster and Nicholl a Committee on Memorials of Deceased Members.

Mr. Nicholl moved that the Local Committee be provided with all necessary tickets for the banquet, in recognition of the excellent work performed by that committee.

Carried.

Mr. Sloan moved that a vote of thanks be extended to the Detroit Club for the many courtesies shown the committee.

Carried.

Mr. Foster moved that a vote of thanks be extended the members of the Local Committee for the efficient services performed by them in the arrangements for the Convention.

Carried.

On motion, adjourned, subject to call of the Chair.

President Vreeland—Gentlemen, you have heard the report of the Executive Committee of your Association for the past year. What is your pleasure?

Mr. C. O. Mailloux, New York—I move that the report be received and printed in the minutes. (Motion carried.)

President Vreeland—We will now hear the report of the Secretary-Treasurer.

REPORT OF SECRETARY AND TREASURER.

The Secretary read the report as follows:

To the American Street Railway Association—

Gentlemen: Your Secretary and Treasurer respectfully submits the following report:

NEW MEMBERS.

The following companies acquired membership at and since the last meeting:

Altoona, Pa.—Altoona and Logan Valley Electric Railway Company..	
Ashtabula, O.—Pennsylvania and Ohio Railway Company.....	
Atlanta, Ga.—Atlanta Rapid Transit Company.....	
Atlanta, Ga.—Georgia Railway and Electric Company.....	
Austin, Texas—Austin Electric Railway Company.....	
Belleville, Ill.—St. Louis and Illinois Suburban Railway Company....	
Boston, Mass.—Boston and Northern Street Railway Company.....	
Boston, Mass.—Old Colony Street Railway Company.....	
Canton, O.—Canton-Akron Railway Company.....	
Cleveland, O.—Cleveland and Eastern Railway Company.....	
Cleveland, O.—Lake Shore Electric Company.....	
Columbus, Ga.—Columbus Railroad Company.....	
Denison, Texas—Denison and Sherman Railway Company.....	
El Paso, Texas—El Paso Electric Railway Company.....	
Exeter, N. H.—Exeter, Hampton and Amesbury Street Railway Com- pany	
Florence, Colo.—Florence Electric Street Railway Company.....	
Hancock, Mich.—Houghton County Street Railway Company.....	
Holland, Mich.—Grand Rapids, Holland and Lake Michigan Rapid Railway Company.....	
Jacksonville, Fla.—Jacksonville Street Railroad Company.....	
Kenosha, Wis.—Kenosha Street Railway Company.....	
Little Rock, Ark.—Little Rock Traction and Electric Company.....	
Maynard, Mass.—Concord, Maynard and Hudson Railway Company.	
New Orleans, La.—New Orleans Railways Company.....	
New York, N. Y.—New York and Port Chester Railroad Company...	
Oneida, N. Y.—Oneida Railway Company.....	
Pittsburg, Pa.—Pittsburgh, McKeesport and Connellsville Railroad Company	
Plymouth, Mass.—Brockton and Plymouth Street Railway Company..	
Pottsville, Pa.—Pottsville Union Traction Company.....	
Providence, R. I.—Providence and Danielson Railway Company.....	
Richmond, Va.—Richmond Passenger and Power Company.....	
Richmond, Va.—Virginia Passenger and Power Company.....	
San Antonio, Texas—San Antonio Traction Company.....	
Savannah, Ga.—Savannah Electric Company.....	
Utica, N. Y.—Utica and Mohawk Valley Railroad Company.....	
Wheeling, W. Va.—Wheeling and Elm Grove Railroad Company.....	

MEMBERS WITHDRAWN.

Atlanta, Ga.—Atlanta Railway and Power Company.....	
Atlanta, Ga.—Atlanta Rapid Transit Company.....	
Bridgeport, Conn.—Bridgeport Traction Company.....	
Brockton, Mass.—Brockton Street Railway Company.....	
Brookfield, Mass.—Warren, Brookfield and Spencer Street Railway Company	

Detroit, Mich.—Detroit, Rochester, Romeo and Lake Orion Railway Company	
Detroit, Mich.—Detroit and Pontiac Railway Company.....	
Fall River, Mass.—Globe Street Railway Company.....	
Highwood, Ill.—Chicago and Milwaukee Electric Railway Company...	
Kansas City, Mo.—East Side Electric Railway Company.....	
Lowell, Mass.—Lowell, Lawrence and Haverhill Street Railway Company	
Lynn, Mass.—Lynn and Boston Railroad Company.....	
Meridian, Miss.—Meridian Light and Railway Company.....	
Mobile, Ala.—Mobile Street Railroad Company.....	
New Haven, Conn.—Winchester Avenue Railroad Company.....	
New Orleans, La.—New Orleans and Carrollton Railroad, Light and Power Company	
New Orleans, La.—New Orleans City Railway Company.....	
Pittsburg, Pa.—Monongahela Street Railway Company.....	
Port Huron, Mich.—City Electric Railway Company.....	
Richmond, Va.—Richmond Traction Company.....	
Richmond, Va.—Richmond Passenger and Power Company.....	

MEMBERS SUSPENDED.

Lansing, Mich.—Lansing City Electric Railway Company.....	
Portsmouth, Va.—Portsmouth Street Railway Company.....	

MEMBERSHIP ACCORDING TO STATES.

Arkansas	1	Kansas	3
Delaware	1	Tennessee	3
Louisiana	1	Virginia	3
Maryland	1	Wisconsin	3
New Hampshire	1	Georgia	4
Nebraska	1	Iowa	4
Oregon	1	Connecticut	5
South Carolina	1	Indiana	5
Utah	1	Missouri	5
Alabama	2	Texas	7
District of Columbia.....	2	Michigan	8
Florida	2	New Jersey	9
Kentucky	2	Massachusetts	12
Maine	2	New York	17
Minnesota	2	Illinois	18
Mississippi	2	Ohio	19
Montana	2	Pennsylvania	22
Rhode Island	2	Mexico	1
Washington	2	Porto Rico	1
West Virginia	2	Canada	5
California	3		
Colorado	3		

RECAPITULATION.

MEMBERSHIP.

October 1, 1901.....	179
New members since last meeting.....	35
	<hr/>
	214
Withdrawn	21
Suspended	2
	<hr/>
	23
	<hr/>
October 1, 1902	191

EXHIBIT HALL, 1901.

Space in Exhibit Hall, 1901, unpaid—	
Fowler & Robert Mfg. Co., New York.....	\$21.50
Francis Granger, New York.....	68.70
	<hr/>
	\$90.20

CASH.

Cash in bank October 1, 1901.....	\$10,128.68
Receipts to October 1, 1902—	
Annual dues	\$4,675.00
Rent of space Exhibit Hall, 1901.....	1,848.50
Rent of space Exhibit Hall, 1902.....	1,669.50
Interest on deposits	185.85
	<hr/>
	8,378.85
	<hr/>
	\$18,507.53

EXPENSES TO OCTOBER 1, 1902.

Printing and stationery.....	\$1,897.27
Postage	264.20
Salaries	1,500.00
Miscellaneous expense	50.00
Executive Committee, 1902	647.45
Twentieth Annual Convention, 1901.....	3,341.11
Twenty-first Annual Convention, 1902.....	548.41
Committee on Standards	311.06
	<hr/>
	\$8,559.50
Cash in bank October 1, 1902.....	9,948.03
	<hr/>
	\$18,507.53

CERTIFICATE OF BALANCE.

Continental National Bank of Chicago.

CHICAGO, September 30, 1902.

I hereby certify that the balance due the American Street Railway Association on the books of the Continental National Bank of Chi-

cago at the close of business on the 30th day of September, 1902, was Nine Thousand Nine Hundred Forty-eight and 3-100 Dollars (\$9,948.03).

(Signed) B. MAYER, Assistant Cashier.

REPORT OF AUDITING COMMITTEE.

DETROIT, October 7, 1902.

To the Executive Committee of the American Street Railway Association—

Gentlemen: We have examined the report of the Treasurer, T. C. Penington, for the past year and find the same correct as appears by proper vouchers accompanying the same.

(Signed) CHARLES W. WASON,

(Signed) D. B. DYER,

Auditing Committee.

President Vreeland—Gentlemen, you have heard the report of the Secretary-Treasurer. What is your pleasure?

Mr. W. Worth Bean, St. Joseph, Mich.—I move that the report be received and placed on the minutes. (Carried.)

The following rules of the convention were then adopted:

RULES OF THE CONVENTION.

1. No member shall be recognized by the President unless he shall announce distinctly his name and address.

2. Speeches will be limited to ten minutes, unless the time shall be extended by the Convention.

3. Members who desire to offer resolutions or other matters to be considered by the Convention are requested to submit them in writing over their signatures, to the Secretary.

President Vreeland—Gentlemen, the next order of business is the discussion of technical subjects. Before taking up these papers, I want to say, for the information of those who are not connected with the Executive Committee, that President Hutchins of the Detroit United Railway, who has done everything in his power, assisted by his able staff, to make this a successful Convention and to add to the comfort and convenience of the Association, as well as its guests, has been quite ill the past week, confined to a hospital. He was able to come out for a few minutes yesterday, and call upon the Executive Committee while in session, and I see this morn-

ing that his doctor has again allowed him to come to this session of our Convention. I told him yesterday that in view of the condition of his health we would fully understand his absence and the causes of it if he did not appear. I am glad to know that he is so far improved as to be able to be with us this morning. You must not expect any response from Mr. Hutchins to what I am saying. I only wanted you to know he is here and to know the reason why he has not personally greeted you this morning. He is not in a condition to do any talking, but I know he will appreciate my sentiments, as well as those of you gentlemen who are directly connected with the work of the Association. (Loud applause.)

(Mr. Hutchins bowed his acknowledgments.)

President Vreeland—The first technical paper is on the "Registration of Transfers." This is an important subject to the members of this Association, as evidenced by the many letters I have received within the past year, asking our practice in New York regarding transfers and the opinion of the management of the company on this question. It was considered by your Executive Committee as one of the important questions. It was a very hard matter to get any one to write the paper, and it has been absolutely impossible to get any one who would open the discussion on it. Some gentlemen who have written to me within the last year and asked an expression of opinion from me on this question have flatly refused to write or speak on this topic. I did not know but what this question occupied the same position as some of the larger questions I indicated in my address. Certainly, nothing in connection with the practical part of the business is as necessary to decide as the method by which the revenue of the company shall be cared for. If any of our members have views on this subject, they should certainly be willing to express them. I asked Mr. Charles D. Meneely, secretary and treasurer of the Brooklyn Heights Company, to prepare this paper, and he has done so, but it was impossible for him to be present at the Convention. There is no necessity of reading it as a whole, for the reason that we have succeeded this year in getting all

of our papers very early, and the Secretary has distributed them at an early date, and they should be in the hands of every delegate. The purpose of having the papers prepared in advance is to do away with the reading of the paper as a whole, as the discussion is fully as valuable as the paper. Mr. Meneely treats of the subject of transfers under two heads; first, "Does Non-Registration Divest the Transfer of Its Cash Value?" The second subdivision is under the head of the "Registration of Transfers," and takes up the practical questions connected with that subject. The points are pretty fully covered in the paper.

A number of gentlemen have said that, owing to the paper being short, they would like to have it read. Mr. Robinson, who is a good reader, will present the paper.

Mr. H. A. Robinson, of New York, read the paper.

REGISTRATION OF TRANSFERS.

The American Street Railway Association—

Gentlemen: Regarding the registration of transfers there is wide diversity of opinion in the street railway world. While there is a large contingent which advocates the registration of transfers, there is a numerous body which strenuously opposes it, and many who have studied the problem have been unable to reach a definite conclusion concerning it.

No mathematical solution of the problem has yet been offered, nor will I attempt any, but will here briefly outline for discussion the chief arguments for and against the registration of transfers with a view to determining, if possible, the weight of evidence from which to draw a conclusion.

Those who advocate the non-registration of transfers place great stress upon the contention that this course divests the transfer of its cash value, and focuses the attention of the conductor on the collection and registration of the real revenue, namely, the cash fares.

On the other hand, the advocates of registration are equally insistent that the non-registration of the transfer does not eliminate its cash value, except to the extent of preventing trading between conductors, and the consequent substitution of transfers for cash fares.

First, does non-registration divest the transfer of its cash value?

Undoubtedly, the fact that the transfers of other lines cannot be turned in at a cash value prevents the conductor from obtaining fraudulently, either directly or through an intermediary, the transfers

of intersecting and transferring lines and converting the transfers so obtained to his own dishonest gain. Nevertheless, while the non-registered transfer may not be used by the conductor in this particular manner, its value has not been one whit diminished to the traveling public, to whom the conductor may, within limits determined by the accounting, either sell or give away rides on the company's cars, which would otherwise go to swell its earnings; for no accounting method has yet been devised which will accurately check the issue of transfers on a large system without undue expense.

Moreover, the non-registration of transfers renders so easy the appropriation of cash fares by conductors that many conductors, who would otherwise be indisposed to take the risk of open stealing, become dishonest. This has been forcibly illustrated on the Brooklyn Rapid Transit Company's system. In the summer of 1900, during the months of May, June and July, conductors were instructed to discontinue the registration of transfers. On August 1st of the same year the registration of transfers was resumed, and, coincidentally therewith, a large number of supposedly reliable conductors, long in the service, were detected stealing the company's revenue. The increase in the number of old conductors, previously possessing excellent records, who were at that time discovered appropriating fares was so marked as to lead to the conclusion that during the preceding three months the ease and safety with which the company's revenue was plundered had tempted these men to steal, and, that upon the resumption of the registration of transfers, the exercise of the habit then formed proved too strong to be deterred by the added chances of detection.

Second, as to the registration of transfers.

It will be conceded, I think, by all practical street railway men that the ideal method of obtaining revenue, assuming one uniform rate of fare and a sure method of preventing transfer trading, would be to register all fares and transfers upon a single register.

Under the above noted assumption the advantages of such a method are obvious. The query naturally arises, do these advantages more than compensate for the loss occasioned by transfer trading? On the Brooklyn Rapid Transit System we think that they do.

By taking transfers out of the hands of conductors and placing transfer agents at points where cars from the same depot intersect and transfer, thereby preventing conductors from trading directly with each other and compelling the use of an intermediary, we endeavor to keep this evil in check and supplement it by the vigilant watchfulness of our inspectors and secret service operators. Our system of stationing uniformed register inspectors between all principal terminal points and the first transfer intersection practically protects the revenue between the outer transfer and terminal points, and enables us to

concentrate our secret service in the central portion of the system to locate register shorts and detect transfer trading.

To further limit the risk of trading to the day of issue we introduced and, I believe, were the first to use a daily dated transfer ticket, which has since been adopted by many of the principal systems in the country.

Doubtless, a further check upon transfer trading is provided by the turning in of transfers by trips and the subsequent checking of line exchanges by the Accounting Department.

Were it not, however, for the lottery law and a certain demoralizing effect that distribution of property by chance has upon the community by inculcating the gambling spirit, it would be possible to offer such inducements to street railway patrons as would absolutely check the cash fares received and the transfers issued. Such a governing inducement would be, to offer cash prizes of a large amount monthly, which would yet form in the aggregate only a small fraction of the amount which is now diverted from the company's revenue by conductors.

In addition to carrying a pad of transfers the conductors would be provided with a pad of numbered cash-fare receipts, each one of which receipts would bear on its face an injunction to hold until the end of the month, when the bearer might be entitled to any one of a number of prizes, determined impartially by a drawing; the prizes consisting of a capital sum, together with lesser sums graded down to a large number of small premiums, which would distribute the cash prizes as far as possible.

The operation of the above plan would involve the issue of a transfer *only* for a cash fare. In practice it would work as follows:

A passenger, boarding a car, would be asked by the conductor, upon payment of fare, if he wished a transfer. Upon receiving an affirmative reply, the conductor would issue a numbered transfer to the passenger from his pad, and upon turning in his pad would have to produce one cash fare for each transfer ticket detached from his pad.

Since transfers asked for are necessary for the ride on the transferring line, conductors would therefore not be able to secure and reissue detached transfers.

On the other hand, if a passenger, upon paying his fare, stated that he did not wish a transfer, it would become the conductor's duty to detach a cash fare receipt and hand same to the passenger. For every cash fare receipt so detached the conductor would also be held accountable for one cash fare.

The inducement for a passenger to take a cash fare receipt would be even stronger than in the case of a transfer ticket, as it might mean a large sum of money in case the number of the ticket drew a prize, and when a passenger, ignorant of its possible value, refused to accept his fare receipt, others would eagerly seek its possession.

Assuming that both transfer tickets and cash fare receipts were taken by passengers for all fares paid, the stubs returned by the conductors would accurately indicate the number of fares collected and would insure the turning into the treasury of all the revenue collected on the cars.

Several marked advantages would follow from the adoption of this plan, as for example, the reduction in the number of transfers used, since many persons, who would ordinarily take a transfer for a short ride after a long one, would prefer the chance offered by the cash fare receipt and decline the transfer, which carried with it no chance for a prize.

Moreover, the number of short-riders would, probably, be increased to an extent that would realize a larger sum than the aggregate of the prizes offered, and again, the trading of transfer tickets between conductors would be rendered absolutely impracticable, for each transfer detached from a conductor's pad would mean a corresponding cash fare to be turned into the company's treasury, and he would, therefore, be debarred from substituting transfers from other lines for cash fares.

Though the operation of this plan would not violate the letter of the Lottery Law in most of our States, inasmuch as no consideration is asked, or given, for the cash prizes distributed, yet the Federal Lottery Law, which absolutely prohibits the circulation of notices of drawings through the mails, together with the decisions thereunder, render a trial of the plan in the opinion of counsel inadvisable.

Possibly its adoption might foster a speculative spirit in the community, but it is unfortunate from the point of view of street railway companies that some method can not be devised which, without undermining public morals or contravening State or Federal Law, would achieve similar results in the protection of revenue.

So long as street railways continue to operate there will be more or less dishonesty on the part of conductors, which no mechanical appliances can wholly prevent; but while the careful choosing of material, fair and considerate treatment and the encouragement of a spirit of honesty and integrity will always be the best safeguards for the protection of revenue, at the same time the study of improved methods of protecting the revenue by mechanical, or other means, should not be neglected, for, though perhaps an uncomplimentary commentary on human nature, it is none the less true, that many men remain honest only because of the fear of detection, and to such it should be our object to minimize the opportunity by all means in our power.

Respectfully submitted,

C. D. MENEELY.

President Vreeland—We shall be glad to have discussion on this paper. Will Mr. Root open the discussion?

Mr. Oren Root, Jr., New York—I agree with Mr. Meneely to a certain extent when he says that the non-registration of transfers does not eliminate entirely their cash value, but the non-registration of transfers eliminates their cash value to such an extent as is possible; in other words, there still remains the possibility of the conductors giving away tickets to other conductors or to their friends, which possibility still remains if you register the transfers. Eliminating that point, it seems to me the only thing to be decided, in the question of registration or non-registration of transfers, is the question whether the cash value—which I think all admit is given a transfer by its registration—balances the possible difficulty which secret service men have in detecting the non-registration of cash fares. It has been our experience in New York (which is contrary, apparently, to that which Mr. Meneely has had in Brooklyn), that the non-registration of transfers does not induce or assist the conductors to steal the cash fares—it has not that tendency, and on the other hand it does not in any way confuse our secret service men. This is, perhaps, peculiarly so in New York, on account of the great number of short riders. With us our secret service men pay absolutely no attention to whether the number of passengers on the car corresponds with the number of passengers indicated on the register, for the reason that a car starting at any terminus of a line may take on ten passengers, five of whom will get off within a half mile. This is more so in New York, on account of the great number of short riders, than in any other city in the country, and for this reason, more than any other, we are very emphatic in our opinion that the non-registration of transfers is the best for our system; but I personally am of the opinion, for an interurban or suburban road, where they carry passengers for long distances, and have comparatively few riders, and check to a large extent the honesty of their conductors through a comparison of the number of passengers in the car as against the number registered, the registration of transfers in that case may be

advisable. But for a city service, like New York, I am emphatically opposed to the registration.

Mr. W. E. Harrington, Camden—We had been operating for some years prior to last summer without registering our transfers. We had reason to believe there might be some trouble in connection with it, and we started to register the transfers last summer and did it for three months. Our secret service department showed such a wholesale trading in transfers that we stopped it, and since that time we do not allow the conductors to register the transfers. We are not registering our transfers, and are of the opinion that we are pursuing the right course.

Mr. H. M. Sloan, Chicago—It seems to me if transfers are to be registered at all, it should be done by a double register. My company was one of the first to put in the double register, and I was anxious about the outcome of their use. I thought the conductors might register the cash fares on the transfer side; that is, when they collected a cash fare they would ring it up on the transfer side of the register, and the inspectors were given particular instructions to watch that matter, which they could easily do on our road at the transfer points. I found to my astonishment there was very little of it. It seems to me the only proper scheme for registering transfers on the same register with the cash fares is to introduce some such system as they have in St. Paul. They have a very elaborate system there, and I believe a paper was read on the subject some years ago, I think at Niagara Falls, explaining the system in detail, and the system as described was that all the cars pass a given point, and when a conductor gets off the car his transfers are taken from him, and when he gets on they are given back to him, and following this up they have an elaborate system of checking in their office, and with that method they are able to eliminate all misuse of transfers.

Mr. E. G. Connette, Syracuse—The conductors of the Syracuse Rapid Transit Railway Company are required to register transfer tickets. It occurs to me that a non-registration of the transfer ticket only eliminates the value of the ticket

to the conductor. It does not prevent the conductor from giving away transfer tickets to people along the road, or to agents at points where they may be sold at a reduced price. The registration of transfers, of course, gives them the same value as a five cent fare; and we use, as a rule, a single register, because we have not yet received an explanation of the advantage of a double register that would justify a separate registration of cash fares and transfers. The advantage in registering the transfers, as we have discovered, was that if there is any speculation on the part of the conductors, it occurs to a great extent when cars are crowded, at which time it is difficult for inspectors to detect whether a passenger pays his fare with a transfer or with money, but it is not difficult to ascertain the number of passengers on a car, and by that means, at least get a check on the car load of passengers. The trading of transfers can, to a large extent, be detected without very much expense by proper clerical help. If there is any wholesale trading between the conductors, the conductors are bound to maintain the sequence of time in which the tickets are issued, and from time to time we check the transfer tickets that are turned in with a view of seeing whether or not the time limit on the tickets is punched with regard to the sequence of time, so if there is any trading between the conductors, they must observe the sequence of time in which the tickets are issued, otherwise they can be detected when the tickets are checked up.

Mr. John I. Beggs, Milwaukee—I believe it necessary to give to the transfer, and every other evidence of the right to ride, all the value that is given to a nickel paid on the car. Under our system the transfers are placed in envelopes by the conductors and deposited in boxes at the terminals of the lines every trip. He likewise does not keep his pad of transfers, but turns it over to the man who takes his run when he leaves the car. If transfers are to be registered, I believe it should be done upon a double register; not necessarily two registers in a car, but a double dial. Some four years ago we adopted a double register. After four years' use of the double

register we have arranged for an exchange for registers which will show the two classes of fares collected on each trip, as well as two totalizers, and it is surprising to what extent the public notes the character of fares rung up and indicated on the dial, not at all times, nor all people; but many people do, and I believe it has a restraining effect upon the conductor. We have some fifty odd transfer points to our system—points at which transfers are given and to which they are given, consequently I do not believe it would be possible for any inspector to detect whether a passenger, particularly at the crowd hours, had paid a cash fare, a transfer or one of the various types of tickets we have. As Mr. Root said, the system in New York is peculiar because of the large number of short riding passengers, and the small amount, I presume, of anything but cash fares. Our system, controlling and operating all of the inter-urban lines centering in the city of Milwaukee, has many commutation rate points, the tickets for which are given on our city lines to carry the passenger out to suburban and interurban points; the tickets being sold to represent the commutation rate. Instead of two straight fares of five cents each, we may have a combination fare of seven and one-half cents, the passenger getting a transfer beyond the first fare point; consequently transfer tickets and three cent fares are indicated with a light-colored disk, and the five cent cash fares with a red disk, and in this way the public is to a certain extent a detective as to whether the conductor is ringing up the class of fare paid. We believe it facilitates the checking of a conductor, and I would not consider disregarding the value attached to a transfer by failing to register it. To our trained men it has all the value of a cash fare and is treated as such. They never know when a particular line may be checked up.

Mr. W. B. Tarkington, Council Bluffs—We register transfers. We cannot understand why any one should ride and present something for his fare which the conductor is not required to ring up. We require every passenger who crosses the bridge from Iowa into Nebraska to pay ten cents. If he has paid five cents on the local line and has a transfer, we want

the conductor to ring up that transfer. If the passenger has a commutation book which entitles him to a ten-cent ride for five cents, we want the conductor to ring twice for that coupon. If the passenger has a ticket to our summer resort, which costs twenty-five cents, we require the conductor to ring twice for the coupon which carries the passenger over the bridge. We are thoroughly convinced that it is to our interests to have the conductors ring for every class of ticket which they accept. We use a double register, and our experience has been that the passengers themselves take an interest in noticing what class of fare the conductor rings up. This is a matter which affects the revenue of the company, and we want to find out the best way to handle it.

Mr. Connette—I would inquire, if a transfer has the same value as a five cent piece, what advantage there is in ringing them up on separate registers, or double registers; and even if the passengers do know that a conductor makes a mistake and rings a transfer for a five cent fare or vice versa, what is the difference?

Mr. Sloan—That is rather a difficult question to answer. The line of demarkation as to whether it is better to register a transfer or not, is so fine that it is merely a matter of opinion as to which is the better; but my conclusion, after having put the system in and used it for four or five years, is that the transfer on a double register is registered very accurately, and that a conductor very seldom collects a nickel and rings up a transfer. I watch this matter very closely. Sometimes conductors believe that the passenger is watching him and he will ring the correct fare, even though he might be tempted not to do so. A register is a monitor. If the conductor supposed that nobody but an inspector was watching a register, the peculations from the company would be very much increased. There are many passengers, as all of us know, who have an interest in the operating department, and a conductor will say that so and so is a spotter. I like to have the conductors believe that such persons are spotters. I look upon the register

as a monitor which reminds the conductors that the passengers are watching him.

Mr. N. H. Heft, Meriden—I am willing to admit this is one of the subjects upon which I have spent considerable time racking my brain as to whether transfers should be registered or not registered. We have tried the system of not registering transfers and also the system of registering the transfer. We are also using now on our system the duplex transfer, which is printed in pads of one hundred, numbered consecutively. These pads are charged to a conductor when he goes out on his run, and credited to him when returned. He is required to punch the transfer, tear off the duplex, and return the original in his envelope, and give the other to the passenger, punching in the time-limit. When the passenger boards the car to which he is transferred, the conductor of that car is required to punch the time that he received the transfer. We have been unable to find more than one way in which the conductor could successfully beat this transfer ticket, and that is at a transfer point where there was an understanding with the meeting conductor, punching up the number of transfers he thinks the conductor would sell for cash fares on the meeting car. This is a risky piece of business, as the spotter on the car would detect it very quickly. With this system it does not seem possible for the original conductor to part with the company's transfers unless he turns the cash fare into the company, and with our system of blanks it is very easy to keep track of the transfers and to make a complete accounting of them with this system, when both original and duplex are registered. We are just introducing this system on one of our other lines. As a general proposition I believe that every ticket or transfer received by a conductor as an evidence of fare should be registered.

President Vreeland—A number of our delegates got in late this morning, after riding all night, and were not able to get breakfast. We will, therefore, adjourn the meeting until 2:45 o'clock this afternoon.

WEDNESDAY—AFTERNOON SESSION.

President Vreeland called the meeting to order at 3:15 p. m.

President Vreeland—We closed the discussion on the registration of transfers prior to adjournment. The paper on "Steam Turbines" has been laid over until Friday, at the request of the writer and some two or three gentlemen who desire to discuss it, but could not possibly be here to-day.

The next paper will be presented by Mr. Oren Root, Jr., of New York City, Assistant General Manager of the Interurban Street Railway Company, entitled "Street Railway Mutual Benefit Associations." You all have copies of it. I will ask Mr. Root in a general way to present some of his points without reading the whole paper and then we will take it up for discussion.

STREET RAILWAY MUTUAL BENEFIT ASSOCIATIONS.

The American Street Railway Association—

Gentlemen: While the purpose of this paper is to discuss Mutual Benefit and Assessment Insurance Associations as applicable to Street Railway employes, it will be well, before treating of that special subject, to say a word on the general topic of Mutual Benefit Associations and Assessment Insurance, the main features of which must be embodied in any plan intended to benefit the class we have under consideration.

The history of Assessment Insurance, when extended beyond a single and continually recruited class, is not encouraging, and insurance practice demonstrates it to be, at its best, more expensive and uncertain than ordinary corporate insurance by strong companies.

Assessment Insurance, however, when applied to particular crafts, which in the very nature of things must be continually recruited, has shown phenomenal results, especially when accumulated surplus has been invested for the benefit of the insured and not dissipated in executive salaries.

I take a street surface railroad in a growing community to be in the indicated class where assessment insurance can be, so far as the beneficiaries are concerned, profitably applied, as is evidenced by a case in point—the Metropolitan Street Railway Association of New York, with whose workings I am familiar and concerning which some details may be of interest.

This association was organized in the Spring of 1897 by the employes of the company at their own suggestion, and was so planned that any employe between the ages of 21 and 45, who had been in the

service of the company three months, was eligible for membership upon the payment of an initiation fee of one dollar and dues of fifty cents per month.

In return for these payments, the Association guarantees to its members:

1st. In case of sickness, the payment of one dollar a day for a period not exceeding ninety days in any one year.

2d. In case of death, the payment of \$300 to any beneficiary named by the insured.

3d. The free service of a physician who devotes his entire time to the members of the association.

4th. The use of reading rooms which are supplied with weekly and monthly papers and magazines, technical journals and a library consisting of over 2,000 volumes.

5th. Use of ten pool tables, for which one cent per cue is charged.

6th. Free monthly lectures and entertainments during the Winter months at the association rooms.

7th. Eligibility for pension under the pension regulations of the Metropolitan Street Railway Company.

The Association started with thirty members and from that time it has steadily grown until to-day it has a membership of over 4,500.

The Association is operated with absolutely no expense beyond the stipulated salary of a physician, as all the officers of the Association are officers of the company and their services to the Association are given gratuitously. The Association Rooms are given rent free by the Company; the Library and pool tables were donations from individual stockholders and directors.

This plan, which I believe with slight modifications, is applicable to almost any railroad property of considerable size, has worked out, in its financial details, some surprising results; for instance, we found that the amount of the tax, fifty cents per month, is a trifle more than is necessary to pay sick benefits and supply a life insurance of \$300, but it is so small, in each individual case, as to make an exact adjustment both inconvenient and impossible, and hence there has grown up in this association a practice of investing the surplus in the securities of the property on which the members are employed. And so we have in this Association the unique feature of every member contributing monthly, in an infinitesimal way it is true, to a proprietary interest in the property he helps to operate.

Before going further into the details of the workings of the Association and discussing the beneficent results it has accomplished for the men and owners of the property, I must, in order to be thoroughly understood, say a few words about certain human agencies, account of which can not be taken in any written rules of practice.

The success of the Metropolitan Street Railway Association is

primarily due, not so much to its sound economic features as to the personal relationship established and maintained between the responsible head of the railway company and its employes.

All of us who have to do with masses of men are aware of the fact that it is not always easy to induce them to do that thing which is obviously for their betterment, whereas experience shows that when their sympathies are stirred and their feelings appealed to they can be and have been induced to the most suicidal courses.

The phenomenal success of the Metropolitan Street Railway Association is due primarily to an intelligent, sympathetic relation fostered and encouraged between the manager and his men who early realized that they were under the discipline of a man who was in thorough accord with them as a class and whose life experiences had been along the very lines they themselves were traveling.

The fusing influence of this relationship, which is as active to-day as at any time since the formation of the Association, has welded the membership into a body, the tremendous force of whose loyalty has been frequently tested in critical emergencies.

The impetus thus given to this Association is great enough to assure its permanence beyond the accidental loss of the influence of the individual who is responsible for its present energy.

I have said this much in order that I may not be misunderstood as imagining so vain a thing as that the mere formulation of a beneficent plan is sufficient to secure its success. In the application of social benefits, as in everything else of human devising, some vivid personal influence is necessary to success, and this success can not be achieved by mere formal approbation or endorsement. If you want to make a concern of this kind go you must give it your time and thought and above all you must be convinced at bottom that it is the right thing to do and that it will succeed.

If I might presume, before proceeding to further discuss the results of Associations, to make a suggestion to those contemplating an experiment in this direction, it would be to avoid patronizing the men. Many good things are spoiled by being overmagnified, and it is my experience that among American and Americanized working men there is a resentment of *official* patronage. The quickening influence of the idea that you and your men are engaged on the same job but in different capacities, when once fixed, is surprising. It would be well, too, not to lose sight of the fact that the benefits arising from helping your men to take care of themselves are not all one-sided.

This thought brings me to a consideration of the benefits arising from associations.

These benefits may be divided into two classes: First; those derived by the employes, and second, those derived by the employer. There is nothing which appeals more strongly to the large majority

of people, certainly to those who have worked for a living, than those things which yield a direct or indirect financial return. No one can fail to see the great benefit which the distribution of from \$20,000 to \$25,000 a year means to the men who are working for wages, and without reserves to draw upon in cases of sickness or other disaster. The services of a physician, the free use of a library, the opportunity to play pool or billiards in a well lighted and well ventilated room at a nominal cost, are indirect financial benefits as well as pleasures which are assuredly appreciated by any body of intelligent workmen, such as are employed by street railway companies. There is a benefit not so apparent but equally real in the creation and strengthening of a common spirit—"esprit de corps"; a realization of common interest in a work of many details but of common end. The gain is the greater as all employes are included, from the helper to the manager. The perfection of army organization is where the soldiers have entire confidence in the leader, and the leader absolute trust in the soldiers. When something of the strength of all goes into the work of each, tasks are more easily done; there is more careful attention to details, a common interest taking hold beyond the working hours gives heart to labor, when the time comes. A street railway touches the public at numberless points; the work of its employes is at each of these points; work with something of heart in it is easier and better than mere hand and head work.

When one remembers that in such a scheme as I suggest there is no demoralizing taint of *official* charity and that the men are gradually realizing that in truth they are doing all the helpful work with their own money, he will realize that the moral uplift far exceeds any of the material advantages.

The benefits of the second class from these associations—those to the employer or stockholder—are not so tangible as those received by the employe, but, nevertheless, exist to a large extent and are apparent to those who are in close touch with the workings of such associations and their bearing upon the management of the Company's affairs. It may be difficult to demonstrate to an outsider, or to put your finger upon particular cases where the use of the library or the association rooms or the pool tables accrues to the advantage of the Company. It is unquestionably true, however, that all of these things create a certain sentiment in the mind of the employe favorable to his employers, and which in times of labor troubles, when the misguided and unscrupulous agitator attempts to cause dissatisfaction, crystallizes into a feeling of loyalty toward the company which could not have been gained in any other way.

At the monthly meetings of the Metropolitan Association, which are held in the association rooms and at which men of prominence and officers of the company speak to the men, the employer, as represented by

the officials of the company, is brought into a personal relation with his employes, not as employer and employe, but as man and man, and in this way there is established a personal relation between them and a feeling of friendliness which certainly, in a large company like the Metropolitan, is not possible in any other way. I believe, as illustrated in the late trouble in Ohio which a large manufacturing company had with its men, that it is possible to overdo this kind of work. When you begin to wet-nurse and patronize working men, you are offending them and making trouble. The idea is to teach them to help themselves.

As an illustration of what opportunity for amusement means to working men one of the pool rooms located at 50th Street and 7th Avenue, takes in on an average of \$45 per week. Several games of pool, at a cent a cue, must be played in the course of a week to make the receipts \$45.

There are, to my mind, three dominant problems in the handling of a street railway property. First, is the relation of the management to its employes; second, its relation to the public and the press; and third, its relation to the state and city officials. Of these, the relation of the management to its employes is of the greatest importance. Fair, considerate treatment of men's natural rights, the establishment of friendly and harmonious relations between it and its employes, is a railway company's most valuable asset. The great successes in the street railway world have been made by ability to successfully handle men.

However unjust it may be to the responsible head of any street railway property, how often has it been the case that the faithful and efficient work of years has been practically forgotten and nullified by differences which have arisen with the Company's employes. The fact that a manager has been able to operate his road at a less cost than ever before and has brought the standard of equipment and the roadbed and the entire physical condition of the property to a higher level, is apt to be overlooked by the company's directors and stockholders in case serious labor difficulties arise. The stockholders of a property not only look to the management for a return upon their investment but values once established they look for their stability and permanence. To assure this stability and permanence, moral forces must be set to work and carefully fostered until they gradually become traditional with the concomitant result of loyalty and efficiency of service.

I believe that the interest the employes take in a financial investment of 50 cents a month in an association and the enjoyment of the opportunities afforded by the libraries, pool rooms, and entertainments, etc, together with the personal contact between the employes and management, bring about a relation between them similar to that which the millions deposited in the savings banks bring about between citizens and their government. I think, with

rare exceptions, that there will be found among savings bank depositors but few anarchists, socialists, or those dissatisfied with existing conditions. The millions of savings bank depositors are among the strongest influences toward the proper government of the country, and I believe that the financial and other interests of employes in a street railway company through their association are equally strong influences for good.

We are living in an age in which no industry had made more rapid strides than the street railway. What was considered ten years ago a liberal policy on the part of street railway companies toward their employes would be considered penurious to-day. The methods of ten years ago cannot be used effectively at the present time.

The relation of capital and labor as represented in street railway properties has undergone a radical change in favor of the condition of labor. The betterment of labor conditions has been just and fair, and, in my opinion, any street railway management will do well to recognize it and meet it with liberality. There is no better way of keeping abreast of this movement than the encouragement and fostering of mutual benefit associations.

There are many things that are necessary to establish proper relations between the management of a company and its employes, but I believe that the most potent factor of all is the benefits received by the employes through a voluntary association and the relations which the social side of such an association establishes between the management and its men.

Respectfully submitted,

OREN ROOT, JR.

Mr. Root—Mr. President, I do not know that I care to go over the paper. The paper is short and gentlemen present can glance it over and get the gist of it probably as quickly as I can tell you.

About the same time, or shortly after the Association was formed, another subject, which is very closely allied to this was taken up, and that was the Pension System. It has occurred to me that it might be of some interest to this Convention to have a brief statement made of the pension system which has been adopted by the Metropolitan Street Railway Company of New York, since this system is so closely correlated with the workings of the mutual benefit association and is really supplementary to the work which I have briefly described in this paper. The employes who are retired under the pension sys-

tem which has been adopted in New York City may be divided into two classes. First, all those employes who are seventy years of age and who have been twenty-five years in the service of the company. Second, all those employes of the age of sixty-five to sixty-nine years inclusive who have been twenty-five years in the service of the company. All those employes who are seventy years of age are retired by the age limit itself. That is compulsory. And all those employes between sixty-five and sixty-nine years of age are retired at the discretion of the board of trustees of the pension fund, if they are found, in the opinion of the trustees, to be incapacitated for active work. The allowance as paid to these retiring employes is divided into three classes. If service in the company has been for thirty-five years or more, these retiring employes are paid at the rate of forty per cent of their annual average wages for the previous ten years. If service has been for thirty years, they are paid thirty per cent of the annual average wages for the previous ten years; and if their service has been twenty-five years, they are paid twenty-five per cent of their annual average wages for the previous ten years. The fund from which these allowances are made is appropriated solely by the company and the employes contribute in no way to it. The object in establishing this pension fund is to step in where the Mutual Benefit Association leaves off and to preserve the welfare of the aged and infirm employes and to recognize loyal and efficient service. We believe that all the employes who are now and who will hereafter enter the employ of the company, unless they should be subjected to very unusual periods of illness, will feel that both they and those dependent upon them will be taken care of if they remain in the service of the company, from the time they enter the service of the company to the time of their death. We, of course, do not intend that all our employes, for instance, men who are engaged in the operation of the cars as motormen and conductors, should continue in such positions until they are sixty-five years of age, at which period they are eligible to retire under the pension; but we do believe that on the average a conductor or motorman, for ex-

ample, can properly operate his car up to, we will say, fifty-five years of age. And from that time to the time when he is sixty-five, when he is eligible for a pension, we expect to take care of him in such positions as that of transfer agents, switchmen, flagmen, messengers, etc., which positions a man in that time of life can, we think, perform with satisfactory efficiency and without any hardship to the man himself. It is scarcely necessary for me to say that our employes and their families have deeply appreciated the establishment of this pension system. You might consider, upon first thought, that the allowances paid, that is, forty and thirty and twenty-five per cent of the annual average wages, which I have spoken of before, is not a material sum; but if you will stop and consider that for every man who retires under the forty per cent clause of the pension system he is practically having held in reserve for him the sum of ten thousand dollars from the time he retires under this system to the time of his death, you will appreciate it. In other words, if a man has been earning an average of a thousand dollars a year and retires under the forty per cent clause of the pension system, he will receive four hundred dollars a year, or four per cent on \$10,000; which is a half of one per cent more than the savings banks pay in New York City. This brings about a situation that any employe who enters the service of the Metropolitan Street Railway Company of New York to-day can say to himself when he reads over the pension system, "If I stay in the service of the company until I am sixty-five years old, with twenty-five years of service, I can have placed at my disposal from that time until the time of my death \$10,000." Where is there in this country any other similar situation, or where is there a company or a business in which a man with the same amount of skill or with the same ability that we require in the street railway work—where is there such a situation that a man, eliminating this pension system, can, if he enters the services of any concern at, say, the age of twenty-five years, during his entire life save and have the amount which the Metropolitan Street Railway Company

to-day says that they will place at their employes' disposal after they are sixty-five years old, with twenty-five years of service behind it? We do not wish our employes to consider, and we do not consider ourselves, that we are going to pay these men this amount in any spirit of charity, but we feel and we believe that they will feel, and do feel, that we are merely paying to them something which they have themselves earned through their years of service and their loyalty to the company. I have made this statement outside of the paper, because, as I say, it is so closely correlated with the work of the Mutual Benefit Association, and is merely fulfilling President Vreeland's idea which he had when that association was formed through his instigation.

President Vreeland—Gentlemen, the paper is before you for discussion. Mr. Root is very familiar with the facts of the management in connection with the Mutual Benefit Association and with the pension system. I know he will be very glad to answer any questions that may occur to you. You gentlemen, quite a number of you, who have written me letters about this matter, can have your letters answered now. I will ask Mr. E. G. Connette, General Manager of the Syracuse Rapid Transit Railway Company, to open the discussion.

Mr. Connette—The Mutual Benefit Association of the Syracuse Rapid Transit Railway Company was organized in 1898. The admission fee is one dollar. The monthly dues are fifty cents. The question of joining the association is entirely voluntary on the part of the employe. The association has paid in the last two years, according to their financial statement, in sick claims, \$1,945.50, and in death claims \$600, making a total of \$2,545.50, paid in two years. Upon September 1st of this year the association had to its credit \$952.17, \$500 of which was invested so that it was getting an interest return. They also have a special or contingent fund, amounting to \$349.48, for the purchase of such things as they may need to make their rooms more pleasant and agreeable, which they have secured by holding entertainments from time to time. They have rooms equipped with pool tables, card tables, and

reading rooms with all the weekly and daily periodicals where the men can rendezvous at times when they are not on duty and enjoy themselves. The association is entirely controlled by the employes. The board of trustees is composed of members of various departments of the system and membership is not limited to the employes, but the heads of the departments and the officers of the company are also members of the Mutual Benefit Association. We have a meeting once a month, and we not only have a meeting of the employes, but the heads of departments and the officers of the company meet with the men. We not only discuss matters pertaining to the Mutual Benefit Association but from time to time we take up subjects of interest to the railroad company, such as accidents, for instance, and we have the employes participate in discussing those subjects and the best methods of avoiding accidents and things of that sort. We bring out what is in the minds of the employes themselves. You will find, or at least we have found, that such benefit associations result not only in the relief of the sick and the afflicted and bereaved families of the employes; but it results in a friendly relationship being established between the employes, the subordinate officers and the management of the company; and by reason of that close relationship which is brought about by the intermingling at the meetings of the association, we learn to know each other better. We learn to feel an interest in each other's welfare, and in the management of the property; and it has been impressed upon the employes that the success of the company does not depend entirely upon the management, but that every employe imparts his share to the success of the enterprise. It has been a means of bringing about a coöperative feeling between the management and its employes, and we feel that the Mutual Benefit Association, so far as our company is concerned, is a great success. The fees are deducted each month by the auditor of the company when the men are paid off; and the amount then is turned over to the treasurer of the association and deposited to its credit by him. All checks that are payable for sick and death benefits have to be approved by the general

manager of the company before the checks can be paid by the bank, so that there is no possible way for any defalcation or for any diversion of the funds of the association. The board of trustees, which is composed of the employes of the company, are allowed one-half day each month on pay to assemble in the association rooms to discuss matters in connection with the management of the association, and to arrange for its monthly meetings. The secretary, who is one of the conductors on the road, is allowed two days each month on pay for the purpose of arranging his books and making up his checks to pay death and sick benefits, etc. Altogether we feel that the Mutual Benefit Association of the Syracuse Rapid Transit Railway Company is a success from every standpoint.

Mr. D. A. Hegarty, Kalamazoo—I would like to ask the gentleman in case an employe is a member of the association and then leaves the company's service, what procedure they take in regard to his membership?

Mr. Root—As soon as a man severs his connection with the company he severs his connection with the association.

Mr. Hegarty—Does he get any return of the money he has paid in?

Mr. Root—No, sir.

President Vreeland—The question just asked has been asked very frequently, and the answer to that is, the Pennsylvania Railroad Company's Relief Fund. The Pennsylvania Railroad Company, you know, by their relief system, handle over \$300,000 a year. In their regulations they put every case in a question and answer form, and their proposition is that it is exactly the same as if you buy a traveler's insurance policy for twenty-five cents to protect you twenty-four hours, and you get that twenty-four hours' protection. They have done their duty and you get your return for your money. The Pennsylvania road has always conducted their relief fund under that system and they have been sustained in it by law. They have the oldest and largest association in the United States. The theory of it is a man pays fifty cents for a month's protection in the association, and all that goes with his protection. If a

man leaves on the fifteenth of the month, he gets twenty-five cents back that he has paid. If he leaves on the twentieth, he gets a proportionate amount. In a word, the idea is that a man is not paying for anything but one month's protection when he pays under the system under which it is conducted.

Gentlemen, the paper is before you and we will be glad to hear from anybody on this subject. We have a good deal of work to do and we would like quick discussion.

Mr. John I. Beggs, Milwaukee—I ask Mr. Root what policy the Metropolitan Street Railway Company pursues as to the care of the funds provided for the pension expenditure, which will naturally grow greater as time goes on and more men because of length of service in the company become entitled to the benefits of the pension system. I ask whether the Metropolitan Company has made an appropriation to its pension fund, which will meet these pension demands as they accrue, or whether it is made an annual charge against operation? I ask this because I am interested at the present time in formulating plans for a similar pension fund. I would like, furthermore, to know what the experience of Mr. Root is with the Metropolitan Company, and likewise Mr. Connette, of the Syracuse Company, as to men laying off a day or so in order to obtain sick benefits. I ask this more particularly for the reason that many years ago I gave a great deal of time to a number of beneficial organizations in the State of Pennsylvania. I believe they would have been wrecked ultimately had it not been for the principles adopted under which a man had to be incapacitated from work a certain length of time before the weekly sick benefits began to accrue. I was wondering whether in these organizations any experience of that kind had been encountered; whether there were, as there is in nearly every body of men, a certain number who feel they must get square with the organizations to which they are paying dues. I would furthermore ask what is the rule when a man is injured in the company's service. I would ask, also, whether it is considered by the two companies which are running these beneficiary organizations that the dollar per day or half-pay,

which is sometimes allowed, acquits the company from any further obligation to the employe?

Mr. Root—Mr. President, as to the first question I will say that the directors of the Metropolitan Company have authorized the officials to spend as high as \$50,000 to pay these pension allowances. There is a provision in the regulations themselves which permits the board of trustees at any time when they consider a payment under this system excessive, to make a revision of the ratio of payments, so that they are not bound by anything they do to-day or a year from now.

Mr. Beggs—You have struck just the point I wanted to get at. Are you not running it somewhat upon the plan of a great number of assessment associations that have been formed throughout the United States in the past few years? In the early stages they were well able to meet the amounts payable, but as the number of members increased it became more difficult. With these men that remain in your service a considerable length of time, if in the future an effort is made to reduce the amount that you have paid to employes before that time, will that not be a source of dissatisfaction and create a feeling of injustice? Will they not say if they had been able to retire a few years earlier they would have received forty per cent, whereas you may be compelled to reduce the amount so that they will receive less than their fellows received? That likewise raises an important question in my mind, and you have touched upon it in your paper, whether it would not be well to exact from them, let the amount be ever so small, but some amount, during the time they are in your service, to be paid into this permanent pension fund and that fund be invested, the revenue from which would provide and guarantee the payment of these amounts in the years after your men had grown old in your service? That has been the complaint against many organizations that have been attempted in this country with very good purposes but which it has been found impossible to carry along. I belonged to a number of them for a considerable length of time. I am throwing out a number of suggestions, some I would not have thought of without Mr.

Root's suggestion, because I believe there are many companies throughout the country that are feeling the very results that were felt by these assessment companies. It seems to me that it is important that before it goes too far it should be well considered. I throw out these questions more particularly for the purpose of arousing a spirit of inquiry among those who are charged with the very serious responsibility of operating these public utilities throughout the country.

Mr. Root—I do not believe that the contingency of over-running the allowance is apt to arise, but if the payments should be at any future time greater than the amount that we have now appropriated the benefits the company have received through the length of service of the increased number of retiring employes will be proportionately greater and the company can well afford to pay them at the same rate as they do now. That was merely put in as precautionary, because the pension idea has not been fully worked out. We are, I think, the pioneers in the street railway world. The Pennsylvania Railroad Company, I believe, was the first to adopt it in this country. It is about two years since it was established and we have got to fall back on some precautionary measure, so that if we do get into trouble we can pull out, but we do not anticipate that we will. We have got a good deal of precedent from Germany and England, where they have done a great deal of this pension work, and they have found there that where the superannuated body contributed themselves, it has not been as satisfactory as where the Government has taken the fund entirely in its own charge. This is a matter, however, which only time can work out. We have not the experience, but we are going into it now and making such regulations as we deem best. When unforeseen conditions arise, ten or fifteen or twenty years from now, as they may, as Mr. Beggs suggests, we will have to work it out on new lines then.

As far as the association itself is concerned, about the men attempting to defraud the association through laying off when they are not sick, our regulations provide that any employe may receive ninety dollars in one year at the rate of a dollar a day,

but his benefits do not begin until he has been sick for seven days, unless he is injured in the service of the company. If he is injured in the service of the company, his benefits begin from the day on which he was injured. There can be very little question about the facts of a case when an employe is injured in the service of the company. The association's physician is a man who is very reliable, and upon whose judgment we place entire confidence; and there is no one who receives any benefits from the association unless he makes a prompt application to the secretary and is examined by the association's physician. Even if a member elects to have his own physician, he is not paid any benefits from the association until the association's physician makes an examination and reports to the secretary that he is entitled to this benefit for which he has made a claim.

Mr. Beggs—I do not think the seven day clause appears in your paper.

Mr. Root—I think that is an amendment which has been passed and perhaps is not in the regulations as originally printed.

Mr. Beggs—I think it is a very important one to have brought out here. It did not appear in your paper, but it covers the point I am getting at.

Mr. Root—No, I do not think it is in the paper.

Mr. Beggs—I am very glad indeed that this has been brought out for the benefit of any one who intends to establish a system of this kind. You will find men that will lay off, but Mr. Root's amendment, which does not appear in his paper, is a very important one.

Mr. Root—I shall be very glad if any of the members of this Association desire our regulations, which enter more into detail, to send them a copy.

Mr. Connette—As far as our association is concerned, the by-laws specifically state that the benefits do not commence until a member has been disabled for seven days. Furthermore, the association employs its own physician, and when a member

is sick that physician must wait upon the member, and the association pays the doctor's bill.

Mr. N. H. Heft, Meriden—If I understand Mr. Root correctly he said when the company organized the pension fund it set aside the sum of fifty thousand dollars, believing that to be adequate to take care of all pensions. I ask him if this sum has been set aside and is at present drawing interest; or if it is an assessment against the operating expenses of the corporation, to be taken care of at the time they are called upon to pay these pensions?

Mr. Root—I said that the Board of Directors authorized the officials to expend that much money, \$50,000, in any one year in payment of these allowances, and that will be considered as an operating charge and will be charged up just as if these men were working in their regular duties which they held before they were retired under the pension.

Mr. Heft—I understand that it does not become a charge against the operating expenses of the corporation until such time as you are required to make payment?

Mr. Root—That is correct.

Mr. Heft—That would be some twenty years from now, or longer?

Mr. Root—We have retired men already under the pension. It went into effect July 1st, and any employe who was sixty-five years old and who had been twenty-five years in the service was eligible for retirement, and they have been retired.

Mr. Heft—How can you treat him as being twenty-five years in the service when your corporation is only some four or five years old?

Mr. Root—There is a provision in the pension articles which says that "in the service" refers to service with any constituent company, either prior or subsequent to its acquirement by the Metropolitan Street Railway Company.

President Vreeland—Anything further on this paper, gentlemen? If there is nothing further to be said on this subject,

we will order this discussion closed and proceed to the next paper.

RESOLUTION RELATIVE TO THE LOUISIANA PURCHASE EXPOSITION.

Mr. A. E. Lang, Toledo—I desire to ask the attention of this convention for a moment. I would like to offer a resolution at this time, in order that a certain matter may get to the ears of as many of our members as possible, and there now seems to be a good representation here, and there may not be later in the session. I have a motion to make following the reading of this resolution which may be of interest to every one:

Whereas, The American Street Railway Association, in Convention assembled, has learned with much gratification of the extensive plans that have been made by the Louisiana Purchase Exposition for the proper presentation at the Exposition of the American Street Railway interests.

Resolved, That this Association extends to the Transportation and Electricity Departments of this International Exposition assurances of its hearty interest in the work they have undertaken, and its hope that the plans will be brought to a full realization.

The resolution was adopted.

Mr. Lang—Professor Goldsborough, of Purdue University, Lafayette, Ind., received the managing directorship of the electrical department of the Louisiana Exposition and he is present to-day for the purpose of enlarging a little upon the scope of these resolutions and giving a little better understanding of them, and I would ask the Convention to extend to Prof. Goldsborough five or ten minutes' time in which to speak upon this resolution. I move that the privilege be given to Prof. Goldsborough. (Motion carried.)

President Vreeland—Prof. Goldsborough, will you come forward? I ask the Professor not to take more than ten minutes, because we have a great deal of work to do.

REMARKS OF PROF. W. E. GOLDSBOROUGH RELATIVE TO THE LOUISIANA PURCHASE EXPOSITION.

Prof. Goldsborough—Mr. President and Gentlemen: I greatly appreciate the honor you confer upon me, in permit-

ting me to tell you something of what we intend to do for the street railway interests at the Louisiana Purchase Exposition. I come here to-day as a representative of the Exposition and of the Business Men's League of St. Louis, to invite you to meet in St. Louis in 1904, because we are preparing for you there a feast that I believe every one of you will thoroughly enjoy. The Louisiana Purchase Exposition, as you probably know, will, by the time the gates open, have expended fifty million of dollars in preparing what we hope will be the greatest of international expositions. I believe that our hope of this will be realized. The National Government has made a most generous appropriation toward the work. This has been seconded by the city of St. Louis, by the citizens of St. Louis, and by the State of Missouri, so that the Exposition Company starts out with seventeen million dollars to devote to the Exposition. The Chicago World's Fair, which at that time was the greatest exposition the world had known, started out with but thirteen million dollars; so that you see from the financial standpoint our initial movement is well backed. We also have ample space in which to present the picture of our national growth. Chicago used Jackson Park with its six hundred acres in presenting its picture. The St. Louis Exposition has a part of Forest Park in which there are twelve hundred acres available for World's Fair purposes, or double the amount of ground used in Chicago. Of the fifteen large exhibit buildings on the ground the smallest has an area of four ordinary city blocks. I use this measure because we are all in the habit of thinking of a city block being three hundred feet on a side. The largest of the buildings will have an area of ten city blocks; this is the largest building under one roof that has ever been built or attempted. I am quite certain that when you know we are organizing a power plant which will have a capacity of over 30,000 horse power you will feel that the illuminations which will be shown at St. Louis will probably equal those of any other exposition. Buffalo presented beyond all doubt the most beautiful picture of illumination which the world has ever seen. It has been very aptly termed by Dr.

Kenelly the Crescendo in illuminations. There they used about 5,000 horse power. With six times this amount of power used at St. Louis, we will probably be able to present to you a picture glorious indeed, when viewed by the electrical engineer; and I think it will be one that we will all be glad to feel we have some part in as electrical engineers and as people interested in electricity.

When we come to consider the presentation of the street railway at the Exposition, we have a very pleasing problem. Naturally, since your work is part electrical and part mechanical, a division must be made at some point. Mr. Willard Smith, Chief of Transportation, is using every effort to exploit all the mechanical details of the railway problem on very broad lines in the Transportation Building. There all matters pertaining to traffic maintenance, maintenance of way, trucks, car bodies, mechanical construction of lines, etc., will be shown. In the electrical department the electrical side of the problem will be pictured. All matters relating to the generation and the distribution of electricity and to the control of cars and trains by electrical methods come in the electrical department. In other words, the electrical engineer in the Electricity Building will study the street railway, or the electric railway, problem from the generator through the transmission system, through the transforming devices, through the sub-stations and storage battery, out over the line, through the motors to the car axle. In the Transportation Department he will study all those things that pertain to the building of the track, ballasting, the construction of bridges, of car bodies, of automatic signal devices and other matters that pertain directly to the mechanical side of this great problem.

Mr. Smith and myself have been working for some months past on a matter which I think will give our exposition an added interest to you. We want to have a double track some thirteen hundred feet in length, on which tests can be made of all street railway traffic systems. Whether these be pneumatic, steam, gas or electric systems, they are all to be exploited. We want to organize these tests on very broad lines. I think you

will all agree with me that at the time of the fair there will probably be a large number of systems using alternating current, as well as the systems we now have using a direct current, and I cannot imagine a picture which will present a greater interest to you than that of seeing these various systems all exploited on the same ground and at the same time by the engineers of the various companies exhibiting there.

This in a nut shell gives you a slight idea of the great undertaking which confronts us at St. Louis. We must advance the St. Louis Exposition ten years ahead of the Columbian as gauged by our national growth. We realize that, unless our exposition is ten years in advance of Chicago, it will be a failure. The directors have taken up the work in this spirit, and I feel as time goes on and I am brought closer and closer in contact with the work, that they will succeed.

President Vreeland—Mr. George W. Parker, General Freight Agent of the Detroit United Railway, has prepared a paper on "Electric Express and Package Delivery." Mr. Parker will present the salient points in his paper.

Mr. Parker—The paper which I have prepared is really a digest of the conditions existing in Detroit. I will abstract the paper as briefly as possible and to the point.

ELECTRIC EXPRESS AND PACKAGE DELIVERY.

The American Street Railway Association—

Gentlemen: The establishment of the electric service is a boon to interurban towns, to which lines are being rapidly extended in all directions within a radius of from 75 to 100 miles, and in a great many cases reaching towns and villages which have never heretofore enjoyed a railroad connection, or at the best, in a roundabout way entailing great delay and almost prohibitive expense. Electric service has also made next-door neighbors of communities between which, before its establishment, even wagon communication was not satisfactory or feasible, so that the electric service may justly be regarded as the chief factor in suburban progress, though not yet a decade old.

To the lay mind, the express and parcel business of the electric line or system would appear to be an additional and profitable use of the franchise, involving no additional expense beyond suitable rolling stock, and the necessary train crew; but my experience has been that the operating expense tends to become greater than that of the

passenger service, for the latter calls for no local stations or agents, the company assuming no responsibility before the passenger has been sighted and after he alights, while it does become an insurer of freight or express from the moment of the giving of a receipt until it has taken one, thus necessitating a salaried agent and suitable depot facilities, stationery, etc.

In addition to the foregoing handicap to a profitable operation of the express service, I find myself confronted, in Detroit, by an ordinance which prohibits the use of trailers, and worse still, which levies a tax of one dollar (\$1) per car per round trip, regardless of whether the car is empty or loaded. This tax is a radical departure from the good old days, when the town or its public-spirited citizens gladly raised a bonus to encourage a railroad connection, and then considered themselves highly favored.

The management of a system should show a proper appreciation of the importance of the express department, and its bearing on the continued and increasing prosperity of the system, in the building up of an interurban patronage, for it seems a necessary conclusion that the out-of-town dwellers will avail themselves of the mail-order and telephone facilities of the large city stores because of the convenient and speedy electric express car delivery to their doors, and the habit once formed of sending their shipments or orders via the electric express car must eventually result in more frequent trips on passenger cars for personal and wider selections of their requirements.

But it must not be assumed that all branches of the system, or even all towns and villages on a branch, warrant the establishment of an electric express service. The population, situation, products and future of each individual place, and the competition of existing steam roads, if any; also the old-established express companies, must be carefully weighed, or that terrible ledger must be faced at the end of the year.

To secure and hold the favor of the public I have found it necessary to insist upon and maintain high-class service, which means all the little details of careful handling, prompt transit and courteous treatment. This naturally calls for the co-operation of the entire management, especially in the operating department, and the personal attention of the general express agent, and his assistant, at all hours, in all kinds of weather, and the ability to avert disaster when least expected. But he must not at any time neglect his office, to which all matters pertaining to the handling of express should be referred, and from which all instructions as to rates, claims, complaints, etc., should issue. The best results can be only obtained by the employment of a traveling express agent, whose special duties should be the soliciting of business and the securing of routing orders from consignees on ship-

pers, which routing orders are instructions to shippers to forward all shipments in connection with the electric express.

ROUTING ORDER.

Form 77

2512

Detroit United Railway.

RAPID RAILWAY

-----190-----

**Until Further Advised Please
Ship All My Orders Via
ELECTRIC EXPRESS**

SAMPLE OF A ROUTING ORDER.

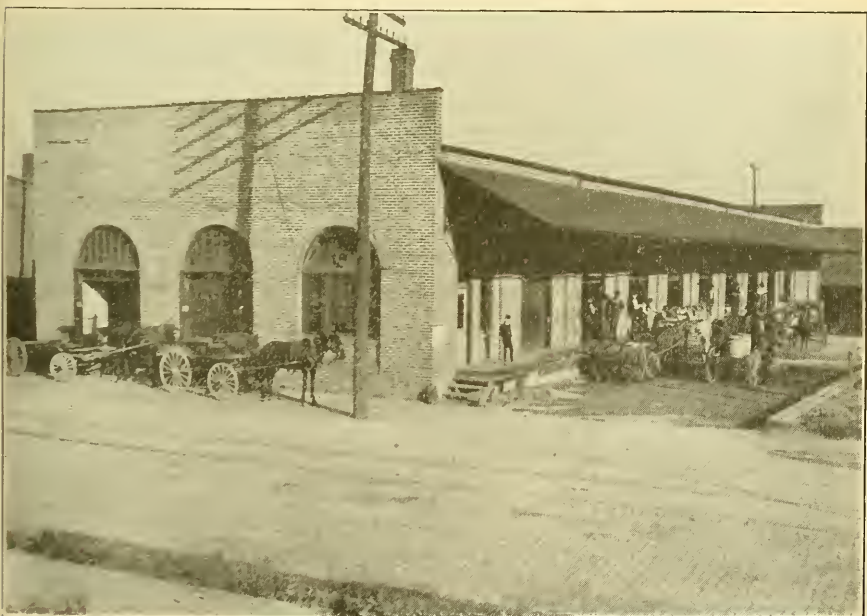
The traveling express agent should have an open ear for all complaints, diplomacy, and a knack of handling people so he can always retain their friendship. In addition to the above, the traveling express agent should have the oversight of the local agents at the various points, who are usually subject to frequent lapses by reason of inexperience. He should, moreover, be capable of acting as trainmaster in the proper distribution of rolling stock, especially in case his road or system should be so unfortunate as to be in the vicinity of the sugar-beet business, or in close proximity to freight of that character.

Where the system includes leased or other lines, in addition to its own, a central freight or express depot and a joint agent are absolutely necessary as a measure of economy and the proper handling of the business. At Detroit, the most important thing to contend with has been the expense of handling, which prior to the consolidation of the electric lines was cared for through three separate depots. For instance, express from the rapid railway system was handled through one depot; that from the Detroit & Pontiac, Detroit & Wyandotte, Detroit & Northwestern and the Detroit, Rochester, Romeo & Lake Orion roads through another depot, and that express for the Detroit, Ypsilanti, Ann Arbor & Jackson Railway through yet another. This entailed an expense for each depot of an agent and staff, which till only recently has been changed and the stations consolidated in one large joint depot, now located on the corner of Fifth and Congress streets, in close proximity to depots of steam roads and navigation companies, thus also decreasing cartage expense where interchange is necessary.

The building is 45 by 195 feet. On one side is the team track or driveway, where freight is received and delivered. The illustrations give a fair idea of the traffic handled. On the east side of the shed



TRACKS FOR CARS ON EAST SIDE OF ELECTRIC DEPOT AT DETROIT.



TEAM TRACK DELIVERY ON WEST SIDE OF ELECTRIC DEPOT, DETROIT.



INTERIOR VIEW OF ELECTRIC DEPOT AT DETROIT.



INTERIOR VIEW OF MILK CAR.



EXPRESS OFFICE AND MILK PLATFORM AT CLAWSON, MICH.



INTERIOR VIEW OF EXPRESS CAR.

there are double tracks with accommodations for four cars on each track, with ample room for switching. The interior of the shed is clear of all posts, thus giving ample floor space necessary for prompt receiving, sorting and loading the express and freight. There is also cold storage for the protection of perishable goods during the winter months.

The joint express agent who would have charge of a depot of this kind must of necessity be an experienced railroad man, also an accountant of no mean ability, as the duties covered are manifold, from the handling of a truck on a pinch, in the depot, to the settlement of his station accounts, which latter job becomes complicated at times from various reasons, such as change in rates, errors of agents, careless checking and handling of freight, etc.

It may be asked to what class of freight or express should an electric service be confined? In this part of the country, the electric express service may be said to have its origin in the transportation of milk, which was originally handled in the small compartment on passenger cars, reserved for baggage, but which has now grown to such proportions as to tax daily the capacity of entire cars.

In the handling of milk our experience has been that the best results are obtained by the issuing of milk tickets, which are consecutively numbered, and taken into account through the cashier's office. These tickets resemble our ordinary shipping tag; they are perforated in the middle, the lower portion being detached by the conductor carrying the cans when filled, and the other portion being left on to pass the empty cans on return trip. This ticket, as per sample, you

Northville 10	Form No. 240	No. 3446	2266	No. 3446	VOID IF DETACHED. Form No. 240 Detroit United Railway Good for transportation of one can milk, said to con- tain 10 gals. or less	TO <i>George W. Parker,</i> Gen'l Exp. & Pass. Agent.
	IF FILLED forward to					
	IF EMPTY return to					
	Shipper must fill out this ticket in full before forwarding can			Northville 10		

will notice, shows the point of shipment, shipper, destination and to whom consigned; this information being on both portions of ticket, eliminates the possibility of errors in delivery of cans when either filled or empty. These milk tickets are charged for at so much per ticket, according to distance the milk is to be carried, and by their use assures protection from loss through bad accounts.

It may be added that the conductor, when accepting shipments of milk, notes carefully that there is a ticket for each can. After the shipment is loaded, he detaches the lower portion and encloses same

Form 158.

2764

Detroit United Railway.

Pro. No.

Car No. ... Init.

WAY-BILL of Express Forwarded from To 190

Conductor Time Via W. B. No.

Consignor	Consignee and Destination	No. Pks	Description of Express	Weight	Rate	Charges	Advances	Pre-paid	Total to Collect

Form No. 248

Detroit United Railway.

G. E. A. Pro. No.

..... Station 190 Agent's Pro. No.

Report of Express over, short, damaged, or wrongly consigned.

From Way-Bill No. Date Car No. Initial

Transferred by From Car to Car at

Condition as noted at transfer

Was Car left or Express unloaded from Car?

2100

Received from Car No. ... Date ... 190

Conductor

State whether Over, Short or Damaged.
Give Full Particulars.

Consignee, Marks and Destination	ARTICLES BILLED

Agent

FORWARDING AGENT ANSWER FOLLOWING QUESTIONS

By whom and in what condition loaded?.....
 By what Car?.....Conductor.....Forwarded?
 For what other Stations did you load similar freight?.....
 What other Cars loading at same time?.....
 Destination of same?.....
 If OVER express is from you, furnish billing and advise.....
 Are you short, and on what billing?.....
 Have you any record of express over?.....
 Was express properly and securely stowed?.....
 NOTE—Agents must make a separate report
 of each consignment, and send one each to
 Billing Station and General Express Agent
 by first passenger train.
 Report for General Express Agent to be filled *Agent*
 out with copying ink, but do not copy.

to the auditor at the end of his trip with regular way-bill showing full particulars of cans loaded, ticket numbers, consignees' names, etc., who in turn checks over the number of tickets enclosed, and if any irregularities, promptly advises the general express agent who takes the matter up with the conductor for explanation.

When delivering the full cans on arrival at destination, the upper portion of ticket is left on the full can, which portion must be on the can when it is to be returned for refilling, otherwise the conductor should not accept it until a ticket is provided. These instructions are necessary on the return empties, otherwise there is possibility of your service being imposed upon, through unscrupulous milk dealers sending their milk in by wagon or steam road, and leaving your line to carry the empties back free of charge.

The question may be asked, what is done with the last portion of the ticket? This portion is left on the can until the conductor starts to distribute cans along the line, when this portion is detached and also returned to auditor at the end of trip, and handled in the same manner as the first portion.

Tapping a great deal of territory that has hitherto had no railroad connection has necessarily thrust upon the electric express service at Detroit a class of freight that ought not to be carried in equipment of that character, and which cannot be discriminated against, the rates charged being governed by railroad tariffs for similar class of freight are in some cases insufficient, and therefore unsatisfactory from the revenue standpoint.

It may be interesting to know how the express is handled on the system in this vicinity, so the following is a brief outline: For use in this service a full set of blanks has been designed and prepared with care. The shipper fills in the receipt. (See next page.) Showing the date, from whom received, to whom consigned, destination and a complete list of articles making up the shipment. This receipt is made in duplicate, a carbon copy being taken. The Detroit

United Railway receives the property "subject to the conditions on the back hereof," which are in the form usually adopted by common carriers.

When express is received at the depot, it is checked in on this shipping bill, or that part of the form marked "Duplicate." If the shipment agrees with the shipping bill, the original is receipted by the checker signing agent's name with the checker's initials. This receipt is retained by the shipper, and the duplicate is kept by the

Form 184

2523

EXPRESS ORDER*Detroit United Railway.*

190

Received from

By DETROIT UNITED RAILWAY, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to the said destination, if on its road, otherwise to deliver to another carrier on the route to said destination.

Marks, Consignees and Destination	DESCRIPTION OF ARTICLES	WEIGHT Subject to Correction

Agent.

Form 184

EXPRESS RECEIPT*Detroit United Railway.*

190

The DETROIT UNITED RAILWAY, will receive and carry the property marked, consigned and destined as indicated below to the said destination, if on its road, otherwise will deliver to another carrier on the route to said destination.

Marks, Consignees and Destination	DESCRIPTION OF ARTICLES	WEIGHT Subject to Correction

Consignor.

SHIPPING RECEIPT.

company and the shipment rechecked into car, thus giving the company a double check on each shipment. Any exceptions as to shipment being in bad order, etc., are noted on these shipping bills, thus enabling the company in case of claim to know the exact condition the goods were in when received and forwarded.

After goods have been received and loaded into express cars, they are then billed out on a way-bill, this form being printed in three sizes—quarter sheet, half sheet and full sheet—the latter being $12\frac{1}{2} \times 16$ inches. The way-bill is the same as express and railroad way-bills, forwarding point, destination, date of shipment and way-bill number showing in proper places. The way-bill numbers are arrived at by commencing with number one the first of each month, and numbering them consecutively until the end of the month. This way-bill number is used as reference in all correspondence relating to any particular matter coming up in regard to any shipment covered by this particular way-bill. The facts shown on the way-bill are designated by the headings of the various columns, which includes consignor, consignee, number of packages, description, weight, rate, charges, advances, amount prepaid and total to collect.

The rate is taken from the company's regular express tariff, which is governed by the rules of the official classification.

The rate on the different commodities handled are according to the value, dimensions and weight of each article. For example, shipments of glassware, furniture or any articles liable to damage from breakage are given a much higher rating than articles that are packed in such a manner as to occupy less space in the express car and which will weigh more than the articles first mentioned.

After this way-bill is complete, it is then copied in a tissue book, one extra tissue being taken. These extra copies are forwarded to the auditor daily, who checks the weights, rates and extensions, and files the tissue copy for future reference.

On arrival of the shipment at its destination the receiving agent checks the various shipments billed to his station from the original way-bill, noting exceptions, if there be any, as to condition of express when received from car. In case of there being any articles damaged, over or short, the receiving agent makes report of the fact on a special form, filling in the information called for in the various blank spaces. This form is made out in duplicate, the original being sent to the forwarding agent for his report, on that portion of this form designated "Forwarding agent answer following questions." This enables the forwarding agent to advise the receiving agent to correct, in case of error in billing, and what course to pursue in case of overs and shorts. This form is $9 \times 8\frac{1}{4}$ inches and is shown reduced in Fig. 1.

The duplicate of this form is sent to the general express and passenger agents' office, where it is recorded in what is known as "The

Detroit United Railway.

Express Received Account Station, Week of 190

WAY-BILL Date	CAR No.	FROM	WEIGHT	PREPAID EXPRESS		D. U. RY. CHARGES	ADVANCE CHARGES	TOTAL OF WAY-BILL	CORRECTIONS		CONSIGNEE (Individuals)	Proo. Total of each No. Expense Bill	Reference folio	Uncollected	REMARKS
				D. U.	Due O. R.				Dr.	Cr.					

FIG. 2

Statement of Express on Hand at Station, 190

When Way-Bill was Received	Date of Way-Bill	No.	Station from which Express was Billed	Local Charges	Advanced Charges	TOTAL		From Whom Due	Description of Goods	Why Uncollected
						Prepaid	Collect			

FIG. 4

Report of Express Forwarded and Received at Station for Month of 190

EXPRESS RECEIVED			STATIONS			EXPRESS FORWARDED		
WEIGHT	Express Charges	Advance Charges	Prepaid Charges	W	E	W	Express Charges	Advance Charges

FIG. 5

Over, Short and Damaged Register." These records remain open until the matter has been finally settled, thereby making it impossible for either the forwarding or receiving agent to allow the matter to drag along without receiving the prompt attention due such matters.

The way-bill is then entered by receiving agent in his "Express Received" book. The pages of this book are $16\frac{1}{2} \times 22$ inches, and the column headings are shown in Fig. 2.

The keeping of this book correctly is the key to what is known as a Station Balance, as the various amounts shown under the headings of "Weight," "Pre-Paid," "Express," "Advance Charges," "Total of Way-Bill," etc., must agree with the corresponding columns of the "Abstract of Way-Bills Received." This form is, as its name designates, an abstract or summary of the totals of all way-bills received, and is made up for periods ending 7th, 14th, 21st and last of each month, and a like abstract of "Way-Bills Forwarded" is made up on a similar form.

The abstracts of way-bills forwarded is compiled from the tissue book copies and shows Date, Way-Bill No., Weight, Freight, Advance, Prepaid.

After the particulars have been entered in the Express Received book an "Expense Bill," shown reduced in Fig. 3 (original size 9×6 inches), is made out, a carbon copy being taken. When the shipment is delivered, the consignee's receipt is taken on the duplicate and the agent receipts for charges on the original. Collections are made on delivery unless the consignee has a regularly authorized ledger account.

When money has been collected by the receiving agent, he makes an entry of it in his cash book. Agents make daily remittances of money collected, holding in the cash drawer only a small amount for change.

At designated times a balance sheet, form No. 166, is made out by the agent; the particulars of the debits and credits are shown opposite the various numbers on this sheet, and are arrived at from the totals of the different forms and books already described.

Form No. 166 is a double sheet $13\frac{1}{2} \times 8\frac{3}{4}$ inches when folded once. The balance sheet is on the first page. The second and third pages show statements of express on hand, forwarded and received, arranged under the heads in Figs. 4 and 5. On the fourth page is a statement of the remittances for the month.

This system for the express service on electric lines radiating from Detroit was adopted with a view to handling express and all accounts relating thereto in as simple, practical and systematic manner as possible.

Baggage is no longer carried in and out of Detroit on regular passenger cars, but follows on the next express car at a uniform rate of 25 cents per piece not exceeding one hundred and fifty pounds.

Where the actual weight exceeds the latter-mentioned minimum, the first-class rate named in the express tariff is applied from and to the point to which baggage is going at actual weight. This arrangement was necessary on account of the additional expense involved in the handling of baggage and the low passenger rates in effect which would not allow of a free checking system.

It is still an open question whether compartment cars could not handle both baggage and passengers during certain light hours of the day, thus giving baggage early preference and more suitable care.

Under our present arrangement of checking baggage, a passenger can have his baggage checked from any point on our system at which

Form No. 100

Detroit United Railway.

Consignee _____		Station _____		100 _____	
Destination _____		Via _____		Pro _____	
For Charges on Express.		To Detroit United Railway Dr:			
No. Page.	ARTICLES AND MARKS.	WEIGHT	RATE	CHARGES.	
From _____					
Date _____					
W. B. _____					
Car No. _____					
Initials _____					
Delivered the above property	Received payment for the Company,	MAKE CHECK PAYABLE TO Det. United Ry. Back Chgs. TOTAL,			
CHECK CLERK.	Agent.				

* ORIGINAL PAID EXPRESS BILLS SHOULD ACCOMPANY ALL CLAIMS FOR OVERCHARGE, LOSS OR DAMAGE

FIG. 3.

we have agents, which arrangement, if the passenger is coming to Detroit, includes delivery to all hotels, steamboat landings, railroad depots and residences, is working out admirably in connection with the Detroit Omnibus Line Co. It might be added that this company (D. O. L. Co.) has representatives to meet all trains and boats, so that the passenger coming to Detroit can by turning over his checks to one of these representatives be relieved of all responsibility in connection with his baggage in case he desires to avail himself of the frequent electric service.

There is a future in the parcel feature of the business, if properly conducted, which problem we have not yet been able to solve to our satisfaction, owing in a measure to the peculiar conditions existing at this point. Under our present arrangement we are accepting parcels weighing from one to fifty pounds for a minimum charge of 15 cents going to points within a radius of forty miles, and a charge of 25 cents

when going to points beyond forty miles. This charge, it must be understood, is for the electric express service only, with a slight additional charge for cartage in case the consignee wishes package delivered.

Respectfully submitted,

GEORGE W. PARKER.

President Vreeland—In considering the subjects for this meeting, your Executive Committee went over the matter very thoroughly and took up some questions that had been presented to them by correspondents, as questions some of the members would like to have brought up, being important new problems in connection with interurban electric operation, and this is one of the questions. Our Detroit friends consented to take this matter up from their standpoint, they probably having the largest express and freight service in connection with interurban operation. They have given us a very valuable paper, and I should like to hear it discussed or any questions asked that may enlighten the meeting with regard to this class of service.

Mr. E. G. Connette, Syracuse—I would inquire of the author of the paper if the original franchise contemplated the hauling of freight through the streets of Detroit, and if not, what conditions did the city impose when it granted this right?

Mr. Parker—The original franchise, as I understand it, did not allow the Detroit United Railway to carry freight through the streets of the city, but an ordinance was passed granting that privilege. The original franchise did not specify anything, if I remember correctly, about carrying freight, but the electric express and freight system was started, and while it was not satisfactory at the beginning, owing to various conditions, such as obstructing the streets, one thing and the other, the city council passed an ordinance prohibiting us from loading or unloading on the streets, compelling us to put up a depot of our own, and still further taxing us \$1 per car per round trip whether the car was loaded or empty.

Mr. C. W. Wason, Cleveland—I would ask the gentleman, from the moneys received, whether the business increases month by month?

Mr. Parker—It is only a year ago this month when the express service was started, and the business shows some increase.

Mr. Connette—There is another question which suggests itself to my mind, which perhaps would be impertinent, but the gentleman can use his discretion as to whether or not he answers it. I wish to know if he keeps his accounts so that he can tell what proportion of the income from the operation of the freight and express service it costs to operate it?

Mr. Parker—As a matter of policy, I prefer not to answer that question.

Mr. Crafts—I would ask Mr. Parker if he has noticed any material increase in the business of the passenger service, due to carrying packages and light express matter?

Mr. Parker—Yes, there is; it always has a tendency to increase the business.

Mr. Crafts—You think it gives you a marked advantage in carrying the package business, that is, that you gain in your passenger service?

Mr. Parker—Yes, sir.

President Vreeland—I gave the president and general manager of the Metropolitan Express Company, which operates in New York City, and in the annexed district, an invitation to attend this meeting, and expected he would be here, with some statistics which would answer many questions regarding this subject, but some local business conditions have made it impossible for him to come. Under the conditions of operation that we have there, the railway company has nothing to do with the express service. The express company has a contract with the street railway company for operating on its tracks, and the business is only limited by the facilities which the express company have been able to establish at the present time. In other words, they have all the time at least thirty per cent more business offered them than they have facilities to care for it. As fast as they have increased the facilities, the business has increased in larger ratio. As to the question of the division as between the actual cost and receipts, based

upon percentages, in the original operation of the system, which means, as you know, the operation of fifteen or twenty express cars for the first six months to establish the business, the average of the whole would more than pay for the operation of the cars, and the interest on the investment is paid by the express company, so that answers your question as far as we are concerned in New York. There has been no expense entailed on our company in the operation of this service, even in its infancy. What the losses of the express company may be, that is not so easy for me to answer.

ANNOUNCEMENT OF MEETING OF MASTER MECHANICS.

Secretary Penington read the following:

Mr. T. C. Penington, Secretary—

Dear Sir: Will you kindly announce that there will be a meeting of all Master Mechanics at Power Station A, at 3 p. m. Thursday. This meeting is called for the purpose of organizing an association of Master Mechanics of the different street railway companies.

Respectfully yours,

THOMAS FARMER,
Superintendent of Motive Power,
Detroit United Railway.

Mr. John I. Beggs, Milwaukee—May I say a word in connection with the announcement which has just been made? I presume this invitation includes the superintendents of maintenance of way and all others connected with the mechanical department as well as master mechanics. I desire to impress upon the presidents and general managers who may be present, the importance of urging on their mechanical staff an attendance at the meeting as requested by Mr. Farmer. I think there are some here who recollect that at our last two meetings, I have suggested the very thing which is contemplated in this communication, a matter which is of great importance to our industries, and that is an organization of the master mechanics of the various companies. We all know how important it has been in steam railroad practice. We have had an illustration ourselves of what has been accomplished by the Accountants' Association, composed of the men in charge of that branch of our business. I believe that even greater good will

accrue to the several companies by the organization and the annual getting together of those charged with the design, construction, and maintenance of the mechanical elements entering into our business. I heartily hope that this matter will be urged and that hereafter we may have an organization of mechanical men as enthusiastic and as effective as has been the Accountants' Association. It would be the best standardizing committee we could have.

REMARKS OF PRESIDENT VREELAND.

President Vreeland—There were some seven topics for papers and discussions as arranged by the Executive Committee. We have gone through with three of them, with all the rest of our Association business to-day, and it leaves four papers for Friday. It is getting rather late, and is hardly worth while this afternoon for us to take up another paper.

As your presiding officer, I want to thank you for your attendance and the interest you have taken in the Association meeting to-day, and I hope when we meet here next Friday morning at ten o'clock to continue the business of this convention there will be as good, if not a better attendance than there has been to-day. The discussions that go with these papers and the work of the Association, can only be an advantage to the members of the Association if the purposes of the Executive Committee in arranging for the meeting are carried out. The Association work and club work in connection with railroad interests, with which I have been connected for the last twenty years, has indicated the value of these various associations to the industries we represent, but much good cannot be secured from the meetings of any association, especially this Association, if there is not an interest taken in it by the members from all parts of the country, and more particularly those interested in interurban railroad questions at the present time.

Following out the lines of Mr. Beggs' suggestion, I want to say to you, gentlemen, as showing what is being done in steam railroad work in connection with associations of this character, that I am and have been for four years president of

the New York Railroad Club, which takes in all of the transportation, mechanical and operating men of the whole Eastern section of the country, part of the Middle States, and in fact, portions of the entire country. That club has a membership of over twelve hundred. The average attendance at each monthly meeting last year was over two hundred, and went as high in some instances as four hundred and fifty, men coming from Chicago, St. Louis, Boston and numerous other points to attend these meetings for the purpose of getting what good there was in them. The discussions which we have had during the past year have had an important influence in connection with transportation and mechanical problems. The importance of these meetings to the members in their work has been emphasized by the fact that there is scarcely a meeting of the association when the president does not have to stop the discussion so as to give the members an opportunity for lunch, so that they may catch the late trains for their homes. Suppose a superintendent of motive power is considering the question of compound locomotives, for example. He has had no experience with them and has no data bearing on the subject and is brought face to face with the problem of what he shall do in regard to the matter. It has probably been suggested to him by his general manager that he attend a meeting of the club and he gets up and asks if any member of the association will give him the benefit of his experience with compound engines. We have in our club such men as Mr. Waitt, of the New York Central, Mr. McIntosh, of the New Jersey Central, men from the New Haven road and the Erie road, who attend our meetings, who are always ready to give every member of the club the benefit of their experience, and the superintendent of motive power in question goes home and the next day is equipped to talk to his manager, and this information makes him a better man in the eyes of his management and shows he knows what is going on. He not only gets the information in a general way, but gets actual data from these men. He probably would not have any other means of getting it so easily as at a meeting of the New York Railroad Club.

As far as your Association work is concerned, I have already said it—I have done so in connection with the New York State Association and it would certainly be true of this Association—that the young men who are connected with the various street railways in the country cannot over-estimate the value of this Association to them in their work and in bringing themselves into prominence. Any young man who reads a paper at one of these meetings which shows intelligence and ability to analyze, and good judgment, is bringing himself before every man who is connected with the prominent street railroad systems of the United States. I take this opportunity, as President of the Association this year, to call these special things to your attention, in the hope of creating an interest in the minds of young men in this particular work. In my twenty-five years of railroad experience I have been able to place a great many men in steam and street railroads, and the first knowledge I had of the capabilities or possibilities of these men was in listening to them before the American Society of Railroad Superintendents, the General Time Association, which is now known as the American Railway Association, the New York Railroad Club, the American Street Railway Association, or the New York State Street Railway Association. You may work earnestly in your own city, and feel that you are somebody there and attracting some attention, but the United States is large and there is a good deal going on in it. It is only by bringing yourself prominently before a large association that the young men may hope to gain a reputation among the various managers of the country, at least in the majority of cases.

I apologize for taking so much time, but in work of this kind, I either go into it to do something, or want to get out of it. I am glad to say that the two sessions that we have held here have been very much above the average of the sessions of this Association, both in attendance and in interest. I hope that this Association will go forward and occupy the place in the electrical railway world to which it should attain. If it does not go ahead and take its proper place, I, for one, do not

want to stay in it. I am too much pressed to give my time to an institution unless it is being pushed up hill by its members.

APPOINTMENT OF COMMITTEE ON NOMINATIONS.

President Vreeland—I will appoint as the Committee on Nominations, to nominate officers for the ensuing year and recommend a place for the next meeting, the following named gentlemen:

Robert S. Goff, Fall River, Mass.

Nathan H. Heft, Meriden, Conn.

Richard McCulloch, Chicago, Ill.

Calvin G. Goodrich, Minneapolis, Minn.

Daniel B. Dyer, Augusta, Ga.

I urge upon all the delegates that they visit the exhibition hall to-morrow so that they may examine the appliances which have been installed for our inspection. The day will be devoted entirely to that purpose.

Adjourned.

FRIDAY'S SESSION.

President Vreeland called the meeting to order at 10:40 a. m.

President Vreeland—While the delegates are gathering we will hold the regular papers and discussion, and listen to the reports of committees. We will first have the report of the Committee on Standard Rules for the Government of Street Railway Employes. Mr. J. C. Brackenridge, of the Brooklyn Heights Railroad Company, New York, is chairman of the committee.

Mr. W. E. Harrington, Camden—Mr. Brackenridge, the chairman of the committee, is not here, and it seems to be the sense of the committee that the rules which have been submitted express only the preliminary work of the committee on this subject, and we would, therefore, request that either the committee be continued, if it is your pleasure, or that a new committee be appointed.

RULES FOR THE GOVERNMENT AND INFORMATION OF
CAR SERVICE DEPARTMENT EMPLOYEES OF THE
..... RAILROAD CO.

In effect 12:01 a. m.,
(Modeled on the standard code of the American Street Railway
Association.)

GENERAL NOTICE.

The rules herein set forth apply to and govern on all lines operated
by the Railroad Company.

They shall take effect, and shall supersede all
prior rules and instructions in whatsoever form issued which are in-
consistent therewith.

In addition to these rules, special instructions will be issued from
time to time, as may be found necessary, and such instructions posted
on the various bulletin boards, whether in conflict with these rules or
not, which are given by proper authority, shall be fully observed while
in force. Bulletin boards are located at the following points and must
be consulted daily by each employe of the transportation department:

.....
.....
.....

Every employe whose duty is in any way prescribed by these rules
must always have a copy of them at hand while on duty and must
be familiar with every rule.

The head of each department will supply copies of these books to
his subordinates, see that the rules are thoroughly understood, enforce
obedience to them and report all violations to the proper officer.

All employes are required to be polite and considerate in their
dealings or intercourse with the public; the reputation and prosperity
of the company depend upon the promptness with which its business
is conducted and the manner in which its patrons are treated by its
employees.

All employes will be regarded in line for promotion, advancement
depending upon the faithful discharge of duty and capacity for increased
responsibility.

While for the effective management of a large system the observ-
ance of stringent rules and the maintenance of strict discipline are
necessary, their enforcement must be impartial as between employees.

Employees may be charged with and required to pay for any damage
done to the property of this company for which they are responsible,
or for any loss or expense incurred by the company by reason of care-
lessness, neglect or disobedience of these rules.

Employees must refrain from the use of profane or indecent lan-

guage and from improper or ungentlemanly conduct; politeness and courtesy must be observed in their dealings with one another as well as with every one with whom they come in contact in the performance of their duties.

In the absence of the proper officials to whom they may apply for advice, assistance or authority all employes are expected to use good judgment and discretion in dealing with matters not covered in these rules.

.....
(Chief Executive Officer.)

GENERAL RULES.

1. The safety of passengers is of the first importance; all work must be entirely subordinated to safety, first, and then to the regularity and punctuality of the service and the comfort and convenience of the passengers. Line repair men, emergency crews and track men will be required to subordinate their work in accordance with this rule to the requirements of the operation of the road.

2. Employes of any grade will be considered as accepting or continuing in employment subject to the dangers incident to this hazardous occupation.

(a) The fact that any person enters or remains in the service of the company will be considered as an assurance of his willingness to obey its rules. No one will be excused for a violation of them even though such rules are not included in those applicable to his department.

(b) Employes of this company will not be identified with or engage in any other business except with the specific permission of the head of the department in which employed.

(c) Employes shall not make assignments of pay; such assignments will not be recognized or honored by the company.

3. If in doubt as to the meaning of any rule or special instructions, application must at once be made to the proper authority for an explanation; ignorance is no excuse for neglect or omission of duty.

4. If an employe become incapacitated from sickness or any other cause, the right to claim compensation will not be recognized; an allowance, if made, will be a gratuity justified by the circumstances of the case and the previous good conduct of the employe.

5. When an employe is discharged from the company's service, he will not be re-employed without the consent of the head of the department from which he was discharged.

6. Employes when leaving the service of the company must sign receipt for their final pay and return to the company all of its property with which they have been entrusted; in default of such return they will be charged in final settlement for all such articles short.

7. No employe will be allowed to absent himself from duty without special permission from the proper officer, nor will any employe be allowed to engage a substitute to perform his duties while he is absent.

8. The use of intoxicating drink on the road or about the premises of the company is strictly forbidden: no one will be employed or continued in employment who is known to be in the habit of using intoxicating liquor; smoking by an employe while on duty is forbidden.

9. In the event of derangement of any of the company's apparatus, breakage of the overhead line, charging of a pole in the public street, unsafe settlement of building or structures, etc., whereby imminent danger of personal injury is caused, the first employe discovering the fact must arrange to protect the danger point, advising the proper authorities by the first available means of the character and location of the trouble; he must not relinquish such responsibility until properly relieved.

10. All medical examinations in behalf of this company of injured persons will be conducted by the regularly appointed medical examiner. Medical attendance to injured persons, whether employes or other persons, will not be supplied by this company except in unusual emergencies.

(a) Whenever, in emergency, any authorized official deems it advisable to call an outside physician such official must immediately notify the claim department, giving the name of the physician called and the reason therefor.

(b) In ordinary cases of personal injury, if proper attention to the injuries cannot be given by an employe using the "emergency cases" provided for rendering first aid to the injured an ambulance call is usually sufficient, accompanied by prompt notice to the claim department.

(c) In case of an accident wherein the question may be raised as to the condition of the car, either motor or trailer, such car must be "run in" at once to either the home or nearest depot, passengers thereon transferred and the car immediately and thoroughly inspected by the shop foreman who will promptly make special report thereon to the superintendent.

11. Information concerning the affairs of this company must not be given to any one except its authorized representatives, who, if unknown, shall in all cases show proper credentials before information is given.

12. Each employe of the transportation service must have a reliable watch, maximum variation allowed — seconds daily, which shall be kept in good and accurate condition and compared daily with the standard time of the road.

13. The collection or solicitation of money by employes of this company from other employes or any other persons in the nature of fees, gifts, etc., is forbidden.

(a) The solicitation of advertisements or contributions for entertainments or similar purposes by or on behalf of any employe or employes of this company is also prohibited.

14. Intoxicated, disorderly or otherwise obnoxious persons are not allowed on the cars operated by this company; conductors are authorized to refuse to carry any such person.

15. Large, bulky packages will not be carried in the passenger cars of this company—passengers will be accepted with only such bundle or packages as can conveniently be carried on the lap, or satchel or valise of reasonable size. Freight will be carried only under the conditions and the tariff as bulletined.

16. Under no circumstances shall any article be hung on any brake handle of any car nor shall any obstruction be so placed or allowed to remain as to hinder access to and use of any brake.

17. Dogs or small animals will be transported in the passenger cars of this company only under the conditions bulletined.

INSPECTORS.

18. Inspectors report to and receive instructions from their superintendent, daily, before they are due to go on duty.

19. They will be expected to set an example to the other uniformed employes in the neatness of their attire, the excellence of their deportment and their loyalty and devotion to the company's interests.

(a) Each inspector will be supplied with the following equipment :

One pair rubber-handled pliers.

One pair rubber gloves.

Small roll adhesive insulating tape.

Ten feet insulated wire.

Supply of fuses—where used.

Light switch plugs.

20. Inspectors must be thoroughly conversant with all rules and instructions issued, render all assistance in their power in carrying them out and report all violations to their superior officer.

(a) They will be responsible for all time tables, running times and time points; they will see that cars are operated on schedule time and properly spaced; when blockades occur the movement of cars will be under their direction.

(b) They will also satisfy themselves that all new men under instruction within their territory by regular motormen or conductors are properly instructed.

21. Inspectors will arrange for any extra service needed and withdraw unnecessary service on their lines in accordance with the

requirements of the traffic, keeping their superintendent advised thereof; at all times their effort will be to improve the service.

(a) They will facilitate the movement of cars or trains carrying mail and give special attention to chartered cars.

22. Inspectors must be familiar with the different types of motors and controllers and be able to remedy slight defects occurring on the road.

23. Inspectors have authority to relieve conductors and motor-men on duty while on the road on account of sickness or any other cause that would prevent them from properly doing their duty.

(a) They must remain on that part of the line or division assigned to them unless it is absolutely necessary to take a car in charge.

(b) They will see that line repair and track men and emergency crews while at work do not unnecessarily interfere with the regular operation of the road.

(c) When a fire occurs to interfere with the operation of the cars they must notify terminal depots of the lines affected, order out the emergency crews of that district and see that hose jumpers or other appliances are procured as promptly as possible.

(d) During the winter season they will see that heaters in cars are regulated in accordance with outstanding instructions; electric heaters must be turned off to one notch in case the power runs low; if necessary they will be cut out altogether.

24. Inspectors will note in detail the condition of the cars, whether properly cleaned, heated, ventilated, lighted and equipped, and that all signs are properly displayed.

(a) When a car becomes disabled so that it cannot be repaired on the road they will have the following car push it to the first turnout and transfer the passengers to the next car of the same line; after the delayed cars shall have passed, such car will be hauled to the nearest depot. When a car is being pushed a drawbar must be used to connect the two, movement must be slow, proper care exercised and the reversing switch set on the disabled car in the direction in which the car is moving.

(b) They will carefully check the load with the register on every car they board; in case of discrepancy they will take up immediately with the conductor, reporting the occurrence to the superintendent.

(c) When transferring passengers from one car to another (Sec. a) they will require the conductor to whom transferred to ring up the number in their presence and will then note on that conductor's day card the number transferred, with statement of cause, signing the memorandum.

(d) They will be familiar with the transfer points of all lines and be able intelligently to direct the traveling public.

25. Inspectors will promptly report all defects in track or overhead work to the proper officer and take necessary precautions to avoid accidents.

(a) In case of break in the overhead line or serious derailment of cars they will at once notify the nearest emergency station, stating cause and location of trouble, which must be promptly repaired; for this purpose the nearest telephone will be used—if charge therefor be made the superintendent will refund the amount.

(b) Should the armature, terminal wires, brush-holders, brush or any part of a motor break that motor must be cut out.

(c) They must see that the track is properly sanded when necessary, especially on grades, approaching junction points, terminals and crossings; they must see that switches and guard rails on curves are kept clean and properly lubricated.

(d) If any buildings are to be moved across the track or any excavation made under or alongside the track, the fact must be reported to their superior officer at once.

(e) In the event of a snow storm they will report to their superintendent promptly for duty and assignment as required.

(f) They will render every assistance possible upon arrival at the scene of an accident, secure the names and addresses of as many witnesses as may be possible and make written report to the claim department, giving in detail all the information obtainable. Their aim will, however, be to so thoroughly train car crews that no accident occurring could have been avoided.

26. They must arrange to be notified in case of fire, blockade or severe storms and must at once take charge of the operation of the line or lines until properly relieved.

(a) In case of snow storms they must arrange for snow plows and sweepers to be run and the lines kept open. They must arrange to sand and salt the rail when necessary, giving special attention to grades, junction points and railway crossings.

RECEIVERS OF THE COMPANY'S MONEY.

27. Receivers will report to and receive their instructions from the superintendent; they will comply with instructions from the accounting or treasury department.

DEPOT MASTERS.

28. Depot masters report to and receive their instructions from the superintendent or the inspector.

29. The depot master will have charge of the depot, barn or terminal and the company's property at which they are located, and will see that all worn-out, broken or defective articles are returned for new; they will have charge of all persons employed thereat, unless

otherwise instructed, and will see that every employe reads the bulletin board at least once daily.

30. They must attend to the proper arrangement of cars, see that they leave promptly on time, and that all cars are properly cleaned, heated, lighted, inspected and equipped.

31. They must see that all employes reporting at that depot, terminal, line or division are prompt and efficient in the discharge of their various duties.

32. They must see that conductors and motormen are ready for duty at the time required and are provided with all the appliances necessary for the safety and proper management of the cars.

33. They must preserve order about the depots, preventing confusion, delays, lounging, drinking of liquor, gambling, etc.; eating in cars is permitted only at those termini having no other facilities.

34. They must not allow conductors and motormen to go on duty unless they present a neat and cleanly appearance, are properly uniformed and are physically fit for duty.

35. They must require all articles found in the cars or on the company's property to be promptly delivered to the designated office or person, all such articles to be plainly marked with the name of the finder, time and date when found, together with place or car in which found; persons inquiring for lost property will be directed to the lost property clerk.

36. No transfer of cars or property shall be made from the depot without an order from proper authorities, and they must immediately notify their superintendent of the transfer desired or made.

37. They must see that all the blank forms and reports used in the transaction of the company's business are properly filled out and forwarded—especially accident reports, which must be given utmost dispatch.

38. They must see that conductors and all others handling the company's money turn in the money, transfer and other tickets, etc., to the designated persons promptly in accordance with the requirements of the treasurer—they must promptly call to account any one failing to so do.

39. In case of snow storms they must report promptly at their depots to assist in getting out plows, sweepers, sand and salt cars, etc., and assisting in so far as they may in keeping the road open.

GENERAL RULES FOR CONDUCTORS AND MOTORMEN.

40. Conductors and motormen report to and receive their instructions from the superintendent or his authorized representative; conductors will also be governed by the instructions of the accounting department which may be issued relative to the handling of transfers or receipts.

(a) The bulletin board must be consulted before starting and at the end of each day's work.

41. The conductor has charge of the car; the motorman is under his direction and will obey his orders (so far as reasonable). The motorman is directly responsible for the handling and condition of the equipment.

(a) Under no circumstances shall both motorman and conductor be away from the car at the same time, unless properly relieved; in the absence of the conductor the motorman is held responsible for the car and its management and must notify the conductor the number of passengers who have entered in his absence.

42. Conductors and motormen must be neat and clean in appearance and wear the uniform and badge prescribed by the company—the badge must be kept in good condition and worn on the front of the cap, and the uniform must be clean and in good repair.

(a) A deposit will be required for the small property of the company entrusted to conductors and motormen; this deposit will be returned at termination of service, when such property must be returned; in default of such return deduction from the deposit will be made in accordance with the bulletined penalties.

(b) Under no circumstances shall employees exchange badges with each other; the official badge must never be worn by another than the person to whom issued.

43. Before leaving the car house or starting from a terminal or after relieving a crew, motorman and conductor will see that all signs are properly adjusted and displayed—each will be held responsible for his end of the car.

(a) While on the road all safety devices must be in place and the different articles of car equipment fully operative; for this the motorman and conductor will be held severally responsible.

44. It is the duty of both motorman and conductor to be on the lookout for passengers; motormen must never run by or pass passengers unless instructed so to do by the conductor or an inspector, when they must either point to the rear or call out "Take the next car."

(a) When approaching passengers on a street on which several lines of cars are operated or on which the cars run to different destinations conductors and motormen must announce to intending passengers the route and destination of their cars.

(b) Should a motorman at any time attempt to diminish the receipts of his car by running ahead of time or too near his leader or by not promptly stopping car for passengers, or shall directly or indirectly harass a conductor or be guilty of any misconduct, the conductor must report the fact at once to the inspector or the superintendent.

45. When any fire department vehicle, ambulance or this com-

pany's emergency wagon is running on the street, cars must be promptly stopped until such vehicle has passed, avoiding as far as possible stopping on a cross street or alongside standing cars or wagons.

(a) Motormen will receive and carry on their platforms, in lieu of a baggage compartment on the car or train, all mail sacks with which they may be entrusted, either United States or company mail. They will stow securely and handle carefully all such mail matter.

46. Conductors and motormen must conform to time table in running their cars, be particular in making time points as laid out on the time cards and avoid loitering on the line.

(a) When unavoidably delayed on the line the time lost is not to be made up by fast running as soon as the fact is noted, but by running slightly faster over the entire remaining length of the trip, and then *only* when this can be done with safety.

(b) When running through dark spots on the road or through fog banks or at any other time when the clear view of the tracks is limited, the motorman shall, except on private right of way, check the speed of his car and run at only such rate as will enable him to stop within the limit of his vision. Conductors for permitting a violation of this rule will be held equally responsible with the motorman.

(c) Crews of all special, express, chartered, mail, supply or other cars while on the road are subject to and must be familiar with the rules, regulations and requirements of the lines on which they are to run; all cars running on the road are subject to the jurisdiction of the superintendent.

(d) When, in case of blockade, a car is run around such obstruction and on tracks not usually used by cars of that line, or in handling mail, express, chartered, official or special cars, the crew must see that all switches used are left in the same condition as when found. When under these circumstances a motorman has occasion to turn a switch he shall, after passing over it, stop, give the conductor the proper bell signal notice and the latter will then reverse the switch, making sure it is fully and properly thrown before boarding his car and giving the signal to start.

(e) In case of blockade it may be that several cars of one line will be bunched; upon the block being lifted such cars will spread again and not crowd together to destination. For the observance of this rule conductors will be held equally responsible with motormen.

(f) When either on or off their time a crew will not switch a car back or turn short of its signed destination without specific authority from an inspector or authorized representative of the superintendent, excepting in the single case of an accident occurring and the car being disabled or required, under these rules, for inspection.

47. Conductors and motormen on duty are not allowed to sit down while the car is in motion except seats are provided for that

particular purpose by the company, and then only on specified sections of the line as bulletined.

(a) Conductors and motormen on duty must not shout, signal or telegraph to motormen or conductors on passing cars or on the street nor carry on any unnecessary conversation with each other or any other person.

(b) The reading of newspapers, books or any other matter than pertains to the *immediate* conduct of the company's business, while on duty, is prohibited.

48. No one but the duly authorized officers of the company will be allowed to stand on the front platforms of passenger cars or ride on any other cars run over these lines. Exception can be made only in favor of policemen on duty and then only in emergency cases.

49. When passengers attempt to get off the car while it is in motion the motorman or conductor must call out to them, "Wait till the car stops." When passengers are alighting and a car is approaching in an opposite direction notify them to look out for the car on the other track.

50. Employes while riding free must not occupy seats to the exclusion of paying passengers or hold any conversation with motorman or conductor of the car. This rule applies generally to all free passengers.

51. When cars are run in the house in the day or night the conductor will see that the lights are turned off and the seats in closed cars turned up; the motorman must see that the controller is on the "off" position, the brakes are set, the power circuit is broken from the car (by removing the trolley from the wire, securing the shoe up from the rail, throwing off the main motor or overhead switch) and the power handles (also air when used) are deposited with the proper custodian or in the proper place, together with switch iron and all other tools or implements as required by bulletin.

52. On double track when a car or train is standing still, receiving or discharging passengers, any car or train approaching in the opposite direction must make a full stop directly opposite the front of the standing car or train; on single track when a car or train is approaching a car or train standing on a siding the motorman of the oncoming car or train will have his car or train under absolute control and run with extreme caution.

53. No car or train shall under any circumstances be backed up more than — feet without the pole (in overhead construction) being changed, and then only with the conductor on the last or rear platform to give the back-up signal when the way is clear and to protect the rear against accident.

54. The motorman must bring the car to a full stop at steam railroad crossings, not nearer than one hundred (100) feet to the

nearest track. He will not proceed until the conductor has gone ahead to the track to be crossed, looked both ways and from that point given him signal by hand, flag or lantern to start. The motorman will also observe the utmost watchfulness for approaching trains and should, in his judgment, danger be imminent from any source he will refuse to start until the crossing is clear and free from all danger. When the conductor has gone ahead of car the motorman before starting will look back and see that no one is about to get on or off the car. This rule can only be abrogated by bulletin notice covering such crossings as are protected by gatemen or flagmen or tower-switchmen at points where the crossings are protected by interlocking signals and derail switches; in such cases the conductor will remain on the car or train, holding the trolley rope over the crossing.

55. The motorman must bring the car to a full stop at all trolley or electric road crossings and junction points, and must not proceed until he receives the proper signal from the conductor. (This rule can be abrogated only as the preceding and only at similar points.) The conductor must not give the signal to go ahead until a full stop has been made. Conductors and motormen will be held jointly responsible for a violation of this rule.

56. If for any cause the motorman has stopped the car without a signal and a passenger should want to get on or off, the conductor will give the signal to stop the same as if the car were in motion. The motorman must wait for the conductor's signal before starting the car, whether he has received the signal to stop or not.

57. Cars must not pass on curves unless the motormen know there is ample clearance.

(a) Speed must be reduced on all curves and switches; on public thoroughfares the speed at such points must not exceed — miles per hour.

(b) The car must not be stopped on a curve except to avoid accident.

(c) When running on public streets the conductor on any trolley line will signal the motorman to go ahead if he has the trolley rope in his hand when approaching a curve; should the motorman fail to receive the signal he will signal the conductor and, failing response, should stop before reaching the curve. The conductor must hold the trolley rope around curves and under special overhead work.

58. Time tables of the different lines will be posted at ——— for the government and information of employes. They will show the assignment of crews to the different runs and the starting time from the terminal of the several trips of each run.

(a) Employes will receive notice, of temporary changes (or patches) of time tables by the posting at ——— of a sign reading

"new table" or "table changed." They will be expected to keep themselves posted concerning current time tables and all changes thereof.

(b) New time tables will be posted not later than — o'clock p. m. of the day previous to their becoming effective. Temporary changes (or patches) of time tables on account of weather or other variable conditions are likely to occur at any time.

59. There shall be a seniority list at each depot which shall show the names of all conductors and motormen in consecutive order according to the date of their assignment to that depot, excepting that for purposes of discipline a man shall have lost any numbers in his chronological standing. When vacancies occur conductors and motormen, each on their own list, will be advanced in seniority in accordance with their then standing on the list.

(a) When changes are necessary in the assignment of crews and runs on time tables (old or new) they will be made according to the seniority listing of the men, to take effect as far as possible on Mondays only.

60. Compensation will be a certain rate per hour or per trip, according to the line where employed; the rate will be the same for conductors and motormen.

(a) In assigning men for duty on regular runs or week-day time tables it shall be done in accordance with the seniority list and the runs given away in the following manner:

1—Full pay straight runs (early and late and night cars in sequence).

2—Full pay swing runs (early and late in sequence).

3—Straight trippers (early and late in sequence according to pay).

4—Swing trippers (early and late in sequence according to pay).

61. All conductors and motormen shall be considered as either regular or extra men; regular men are those that have regular runs on the week-day tables; extra men are those that are not assigned to regular runs on the week-day tables. When first appointed conductors and motormen will serve as extras, working up gradually to regular runs.

62. There shall be at each depot a daily working list which shall show the names of all extra men in the order in which they stand for work on the following day.

(a) The daily working list shall be a revolving list; that is, when first for work is assigned for work his name (provided his work for that day shall have amounted in value to at least \$—) shall be dropped to the bottom of the working list and work shall not fall to him again until every man whose name followed his on the working list of that day shall have been excused, jumped, suspended, discharged or put to work.

63. There shall be a daily excused list at each depot which shall show the names of all men, regular and extra, who have been excused, suspended, discharged or resigned, and the names of those who will fill their places for the day.

(a) When an extra man is excused for but one day his name shall be dropped to the bottom of the working list of that day, irrespective of whether work would have fallen to him or not.

(b) No conductor or motorman will be excused from duty until he *sees* his name posted on the excused list, except in case of sickness, when his written statement of the fact must be sent to the agent to whom he reports at the depot by at least such time as he would personally report for duty were he going to work; no telegraph or telephone message will be accepted.

(c) It shall be understood that conductors and motormen excused on account of sickness and so marked on the excused sheet are off for an indefinite time, which shall be not less than two days nor more than thirty days. At the end of thirty days, unless the sick leave shall have been extended upon proper application, the absentee may be dropped for non-attendance.

(d) When an extra or regular man who has been marked off sick desires to return to work he must report to the designated agent before — o'clock p. m. of the day previous to the one on which he wishes to return to work so he may be marked up for work the next day.

(e) Any conductor or motorman absenting himself for ten days or more without having been excused and without being heard from shall, in the discretion of the superintendent, have his name dropped from the seniority list and be discharged for non-attendance. Should he return within ten days he shall give satisfactory explanation of his absence to the superintendent before resuming work.

64. The working and excused lists shall be posted at each depot daily not later than —o'clock p. m.

(a) The names of conductors and motormen not shown on the time tables as in charge of regular runs will be shown on the excused list or the working list.

(b) Unless otherwise marked on the excused list or on the working list, extras must be in attendance at the depot at least — minutes before starting time of the first car out in the morning and be prompt in attendance on all changes during the day thereafter until assigned for work.

65. Regular men shall be assigned, in so far as possible, on Sunday, holiday or special day time tables according to the seniority list; extra men shall be assigned on such tables after the last regular man desiring it has been assigned, according to their standing on the daily working list—that is, the extra standing first for work on Sunday morning, for instance, shall be given the first run following the regular

men, and so on. An exception may be made to this when necessary to insure to certain men their proper amount of rest between the time of their week-day and Sunday assignment.

66. Conductors and motormen having regular runs must report verbally to the designated agent not less than — minutes nor more than — minutes before their starting time from the depot. If he is not at his post they will await his return and then report.

(a) When a crew is to relieve another crew at a distant point from the depot the conductor and motorman must report to the above designated agent not less than — minutes nor more than — minutes plus the running time before the starting time from the point of relief.

(b) No compensation will be allowed for reporting as required in the above rules.

(c) The above rules apply as well to the latter part of swing runs.

(d) Extras when assigned temporarily for regular runs are subject to the above rules.

67. A conductor or motorman shall be considered to have been "jumped" when he has been superseded for work by another for the following reasons:

1—Failure to report to the designated agent in accordance with the requirements of rules 63 to 66 inclusive.

2—Failure of conductor or motorman to be on his car at the starting time, even though he had reported to the proper agent at the proper time. This is applicable to all trips, unless the employe has been excused by the same agent or authority.

3—Failure of extra men to report in accordance with the rules governing regular men when they are assigned for regular runs.

4—Failure of extra men to respond to call for work during changes.

5—Failure to respond to call for work or to report at the expiration of time for which they have been excused or at time marked on the working list.

(a) When necessary to assign conductors and motormen from one depot for temporary service at another depot, their names shall be shown on the working or excused list at their own depot with the time they are expected to report at the depot where they are to work; and failure to so report in accordance with these rules will result in being jumped.

(b) In case of delay from blockade, especially at hours of the day when headway is long, should it be clearly proven that a conductor or motorman was prevented by such blockade from reaching his depot previous to his reporting time, and providing there was no other way for him to reach the depot, the jump shall not be counted.

(c) In the matter of discipline for being jumped, regular and extra men shall be upon the same footing and so far as possible they shall be treated alike. An accurate record of each and every jump will be kept.

(d) Penalties for jumps shall be as follows:

68. Bell signal rules—

Conductors to motormen—

CONDUCTORS MUST KEEP THEIR HANDS OFF THE BELL SIGNAL CORD OR ROPE EXCEPT WHEN IN THE IMMEDIATE ACT OF TRANSMITTING A SIGNAL.

1 signal, *car standing* at transfer point, motorman will then signal the number of passengers boarding the car by the front platform.

2 signals, *car standing*, go ahead—all clear.

3 signals, *car standing*, back the car slowly—all clear.

1 signal, *car in motion*, stop at the next street, station or other designated point.

2 signals, *car in motion*, conductor has hold of trolley rope and is on the rear platform ready to take the curve; or, on answer to the motorman's signal of a possible obstruction standing or moving alongside the track near the car, that the car can pass slowly.

3 signals, *car in motion, danger—stop immediately, emergency.*

4 signals, *car in motion*, passengers to be transferred to the intersecting line—motorman will so signal.

Conductors will be careful to give each signal clearly and distinctly.

Motormen to conductors—

Motormen must not assume any signal is INTENDED—they must require a clear and distinct stroke of the bell for each, except the emergency signal.

1 signal, *car standing*, one passenger has boarded car by front platform, this to be repeated after the conductor's signal for the information as often as necessary to cover the case.

2 signals, *car standing*, conductor will reverse switch over which car has just passed.

3 signals, *car standing*, car must be backed—is all clear?

4 signals, *car standing*, conductor is needed forward.

1 signal, *car in motion*, approaching a curve—conductor will hold rope; or, on approaching a possible obstruction

standing or moving alongside the track near the car, on receiving this conductor will promptly respond after taking proper action, as above.

- 2 signals, *car in motion*,** conductor will immediately set the rear brake and stop the car.

A succession of quick signals is notice to conductor that trolley has left the wire.

(a) Air, gong or whistle signals—

1 signal,

- 2 signals,** to be sounded on approaching a cross street or any danger or to give notice of approach.

3 signals, another car is following on the same time and rights, a headway behind. ON SINGLE TRACK LINES THIS SIGNAL MUST BE REPEATED IN ACKNOWLEDGMENT BY THE MOTORMAN OF THE CAR OR TRAIN PASSED.

- 4 signals,** approaching an intersecting line is notice to the crew of the car on that line that passengers are to be transferred to them.

(b) Classification Signals—

These are conveyed to all concerned by a lamp or flag on the forward end of the car, carried in the bracket provided for the purpose. Their significance is as follows: WHITE light or flag signifies the car or train is an extra and running on no scheduled time.

GREEN light or flag signifies another car or train is following a space distance behind and running on the same time and rights. Motorman on any car carrying this signal must notify the motorman on each car passed (on single track lines) by the signal (Rule 68a), as provided, and the motorman so notified will repeat the signal in acknowledgment; in case a reply is not promptly made the motorman giving the signal will stop and verbally notify the other, reporting the occurrence to the superintendent on reaching the end of the run.

(c) Color signal rules—

RED invariably signifies danger, and a red flag by day or a red light at night is the order to stop. Under NO circumstances will such a signal be passed without a full stop having been made within not less than ten nor more than one hundred feet BEFORE the signal is reached, and the conductor must make certain that any further order or instructions intended are received and thoroughly understood before he gives the signal to start.

GREEN signifies the necessity for caution, and a green flag by day or a green light at night is the order to proceed with the car or train under absolute control.

WHITE, when used for signaling, indicates safety; but the swinging of a white lantern at night over or alongside the track is a

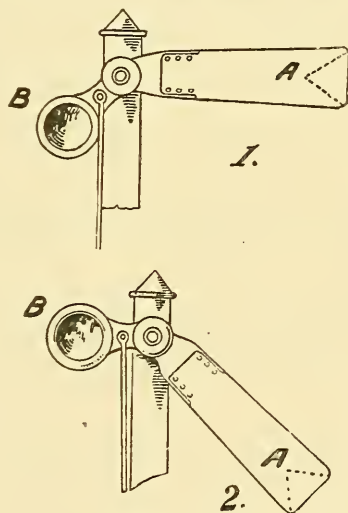
signal to stop. A white lantern is also used at night hung on the gates protecting a railroad crossing to indicate the position of the gate.

(d) **Fixed signal rules—**

SIGN signals, such as "stop," "slow" or "breaker" signs, are placed at points requiring special protection; special instructions will be issued covering their position and use.

SEMAPHORE signals, as shown in figures 1 and 2, are of two classes, "HOME" and "DISTANT."

The home signal is supplied with a red lens, B, and the blade, A, of the signal is painted red and is square-ended, as shown by the full lines in the illustration. When in the position shown in Figure 1 this signal will show a red light at night and the signal in this position is an absolute order to stop (see Section C above). Such stop must be made not less than ten feet nor more than one hundred feet distant from and BEFORE reaching the signal, and the car or train must not proceed, when so stopped, until the signal is "cleared." The clear or safety position of the home signal is shown in Figure 2 by



FIGS. 1 AND 2.

the blade being in an inclined position which will show a white light at night, and when in this position gives permission to the car or train to proceed.

The distant signal is supplied with a green lens, B, and the blade, A, is painted green and is "fish-tailed," as shown by the dotted lines on Figures 1 and 2. When in the position shown on Figure 1 this signal

will show a green light at night and the signal in this position is an order to proceed only with the car or train under perfect control, this order to remain in force until the next signal is reached or the point or obstruction to be protected by slow speed has been passed. The clear or safety position of the distant signal is shown in Figure 2 by the blade being in an inclined position, which will show a white light at night, and when in this position gives permission to the car or train to proceed without slackening speed.

When two or more semaphore signals of the same class are located on the same post the top blade (and light) governs the right-hand track or route; the next lower signal governs the next track or route to the left of the first, etc.

A SIGNAL IMPERFECTLY DISPLAYED OR THE ABSENCE OF A SIGNAL AT A PLACE WHERE A SIGNAL IS USUALLY DISPLAYED must be regarded as a danger signal and the fact reported at the first opportunity to an inspector or the superintendent.

SPECIAL INSTRUCTIONS FOR CONDUCTORS.

69. Conductors must be civil and attentive to all passengers, especially ladies, children and elderly persons. They will endeavor to provide seats for all, when necessary requesting passengers to sit closer together.

(a) Conductors must announce distinctly the names of streets and stations, in each case calling the following street or station immediately on leaving or passing any street or station. They will also announce the approach to any point of considerable travel and at transfer stations or points will announce the lines to which transfer is made and their destinations.

(b) Conductors must keep the rear platform, doorway and brake free from obstruction as far as possible and not allow passengers to stand in front of the controller box. When the platform becomes crowded they will request passengers standing there to step inside the car.

(c) On closed cars when passengers crowd inside the rear door the conductor must request them to move forward and make room for others. Under no circumstances will conductors allow passengers to ride on the bumpers, roof or side step (especially when crossing a bridge) except —————

(d) Conductors must see that passengers do not place their feet upon the seats.

(e) Conductors must give particular attention to the ventilation of closed cars. No set rules can be issued to cover; good judgment must be employed to secure the comfort of passengers.

(f) Conductors will be governed in the handling of heaters in the cars by the instructions as bulletined.

(g) Smoking will be permitted only _____

70. Conductors must never under ANY circumstances operate the controlling mechanism of the car or train; should the controller on the head end of the car or motor car prove defective and inoperative the conductor will take position at the head end of the car or train and transmit signals to the motorman, who will then run the car or motor car from the rear end of the car or from the rear end of the forward motor car of the train. In this event only half speed shall be used in such movement and the conductor must have protected the rear end of his car or train from any following car or train as per detailed bulletin instructions. While in this position the motorman will look out for any passengers desiring to leave the car. Should the motorman become incapacitated the conductor will at once stop the car or train and protect it.

(a) On double-track lines the in-track gates front and rear must be kept closed and the in-track side steps securely fastened up. Should such appliances become out of order on the road the conductor will be particular to guard against accidents occurring therefrom and will turn the car in upon reaching the end of trip or the depot.

(b) When possible to avoid it conductors must not give the go-ahead signal from any point other than the rear platform of the car or rear car of the train, and then only after being careful to see that all is safe.

(c) The conductor shall never leave the car for any purpose while on the road without first notifying the motorman, who will then be in responsible charge of car and passengers.

(d) In case of thunder storm the conductor will turn on the light circuit and keep lights burning until all signs of lightning are past; in case any considerable stop is made the conductor will remove the trolley wheel from the wire until ready to proceed.

(e) When another equipped car is being towed its pole must be drawn down and tied to the dash rail.

(f) When two cars are coupled for running or a trailer is used the signal for starting must be given by the conductor on the rear car first, after each stop, and promptly repeated by the conductor on the forward car, each conductor being careful to know that passengers are safely on or off his car. Should the two cars be under the charge of a single conductor he must not give the starting signal unless standing on one of the platforms between the cars, and then only after satisfying himself that all is safe.

(g) Except in case of absolute necessity to avert accident, the conductor must never remove the trolley from the wire until after the power has been shut off and the car stopped.

(h) When not otherwise engaged the conductor must be on the rear platform of the car, or if a trailer is used on the front platform of the trailer on the lookout for passengers who wish to board or leave the car; while on the stand the conductor must be near the rear platform of the car or train to solicit passengers and give information; when on a grade the conductor must be on the rear platform of the car or the front platform of the trailer used, ready to apply the brake if necessary; when passing any transfer point the conductor as well as the motorman must be on the lookout for the transfer signal from an approaching car on the other line, in order that passengers may make the transfer without undue delay.

(i) The conductor will see that the light circuit of the car is in good order before leaving the depot and will turn the lights on and off as needed; in case other than electric lights are used he will be sure to see that they are always ready for use and light them when necessary, but will not fill kerosene lamps. He must, with the motorman, make sure the headlight is burning brightly on the head end of the car after nightfall.

(j) When tail lamps are used the conductor must see that they are in proper condition for use and at sunset he will see that they are lighted and kept burning on their proper position of the car.

71. Conductors must not take charge of or become responsible for any article not paying transportation charges as per freight tariff posted, except only articles used in the company's service and placed on their car by an authorized employe of the company.

(a) Conductors must promptly turn in to the authorized receivers of such property all articles found in their car or on the company's property, noting on a tag attached to each article their name, trip, date, time and place of finding.

(b) Conductors will prohibit all begging, peddling or vending on their car or train except by the agents of the company authorized by this company to so sell; in no case, however, should any attempt be made to remove such vendor, etc., from the car while it is in motion, and no threat or intimidation should be used to such persons.

72. A day card or train card will be furnished the conductor upon reporting for work by the agent to whom he reports, such card calling for information which must be filled out in detail and in accordance with bulletined instructions for each half-trip. Conductors will make up this card at the end of every half-trip and will be held strictly responsible for the accuracy of each and every statement made thereon. On the back of this card conductor will note any occurrence on each trip of which memorandum should be made; such card shall be turned in with the transfers and money collected to the receiver of moneys at the end of each day's work or at the end of any number of consecutive trips.

(a) Conductors will receive transfer pads and a punch from _____ before starting work each day or swing and will return the unused transfers with the punch to _____ after each swing or day's work; when making such return they will be given a properly numbered check which will serve as a receipt for the punch.

(b) Each conductor must provide himself with \$—— in change before going on duty.

(c) Before taking car out of house or from terminal when beginning work, conductor must see and know that the register is securely bolted and locked to the register block; for the condition of the register the conductor will be held strictly responsible.

(d) The conductor will see that the register is set in the proper direction in which he is about to move and will turn the direction only as instructed by bulletin notice.

(e) The conductor must promptly collect and register the fare of each passenger on the car, if possible within a block after boarding it, except at such points where an agent of the company shall have made the collection—as shown in bulletined orders—and excepting in such cases as scheduled herewith where the passengers are entitled to free transportation:

(f) Conductors must not collect fares when approaching railroad crossings, transfer points, curves or switches.

(g) After making collections of fares conductors shall count the number of passengers on the car or cars and know that, excepting for the free, collection has been made from each and registration properly made. Fares must be registered singly as collected and not in bunches. When compelled to make change he will face the rear of the car, or, if on a trailer and working the train alone, face forward.

(h) If, after his fare has been collected and registered, the passenger discovers he is on the wrong car, the conductor will exercise his judgment as to return of the fare; if refunded, the conductor must not fail to ring up each other fare collected thereafter, but will make a note of the occurrence on the back of his day card and deduct the amount from the amount thereon called for to be turned in to the company's receiver. Also, when a conductor registers more fares than he collects such mistake can be corrected only by reporting it to the office.

(i) When passengers are transferred from one car to another at any place other than a regular transfer point the number of persons transferred, cause of such transfer and number of each car will be

noted on the back of each day card and signed by each conductor engaged in the transaction; such persons will be registered on the car they board, but no further fares will be collected from them. If an inspector be present his signature must be secured on each day card as authorizing the transfer. The conductor must remain in charge of the disabled car until relieved.

(j) Should a conductor for any reason change his car after commencing his day's work he must not only note the number of the new car on the face of his day card opposite the half-trip on which the change occurred, but as well note on the back of the card the reason for the change and any damaged or filthy condition in which the new car or its equipment may be found.

73. When any conductor has any personal knowledge of an accident occurring in which any property may be damaged or any person or animal is likely to or may have been injured he will make prompt report of all the facts in the case to his depot immediately upon arrival at that point and as soon as possible fill out in exact and full detail a blank form provided for his use in such cases headed "Conductor's Accident Report." If the conductor was a passenger on a car involved in the accident or a nearby eyewitness of the occurrence or reaches the spot in time to do so, he will render every possible assistance to the conductor of the car and secure the names of as many witnesses not on the car as he can. If in charge of a car involved in any disturbance or accident he will secure the names and addresses of all possible witnesses, whether they actually saw the occurrence or not, in any event securing the name and address of every lady on the car. It is much preferred to have a witness write his own name and address if he can be induced to do so. Soon as the accident report is filled out it must be delivered, with the name slips of witnesses, as promptly as possible to the authorized representative of the superintendent.

(a) In case of serious accident the conductor or, if he so delegate, the motorman must immediately report the case by nearest telephone or telegraph to the nearest operating depot, dispatcher or division point, stating briefly the nature and probable extent of the trouble so that adequate assistance can be sent.

(b) The conductor must never eject a person from the car for disorderly conduct or non-payment of fare unless they get the names and addresses of witnesses. They will use no more force than is necessary in making the ejection, first bringing the car to a full stop at a traveled road, street or highway, a regular stopping point for passengers or a station.

(c) For each light of glass maliciously or wantonly broken by a passenger or bystander the conductor will collect from the offender the sum of \$— and turn in such collection with his fare returns for the

day or swing; a note must be made on the back of the day card to cover the occurrence and refer to the remittance.

SPECIAL RULES FOR MOTORMEN.

74. While the car or train is in motion responsibility for safe running and its safe handling lies with the motorman; he must never attempt at such time to do anything but handle the controlling mechanism and watch the road ahead, being prompt to give warning of his approach to danger points or on the appearance of danger. This rule can be modified only under the circumstances covered by rule 70.

(a) Under NO circumstances will any motorman permit another motorman or any person, other than a student placed by proper authority with him for instruction, to run the car or train of which he is in charge while he is on duty.

(b) Upon leaving the operating position, box or platform for any reason whatsoever when the train or car is standing, the motorman must remove and carry with him the controller and reverse handles (together with the power brake handle where power brake is used), and must in all cases have shut off the current through the controller, broken the circuit through the car (by throwing the overhead circuit breaker, main motor or cut-out switch) and fully set the brake.

(c) Under no circumstances and for no cause whatsoever shall the motorman leave the operating position, box or platform of any motor while the car or train is in motion, except in the single case that an accident endangering himself is imminent and he shall have done all he can to stop and reduce to a minimum the impending damage to person or property.

75. Motormen are expected to become familiar with the electrical and mechanical construction of the cars in order to be able to meet emergencies arising on the road; they will be held directly responsible for the condition of that equipment.

(a) They must make it their special business to carefully examine all parts of the car before leaving the barn, depot or terminal or taking charge of the car to see that all safety devices, signal gong, foot gong, air whistle, fender, controller reverse, sand boxes, etc., are in place and in good and fully operative condition headlight glass and reflector clean and after sunset the light on the forward end of the car or train is burning properly and brightly.

(b) They will see that all tools required to be carried are on the car or motor; where fuses are used they will be sure to have a sufficient supply of the proper design and amperage and shall never use heavy wire or any substitute therefor for a fuse. They must have at all times an ample supply of sand to cover any possible demand.

(c) Motormen must apply to the shop foreman in charge of cars for any specific information regarding operation which they do not

thoroughly understand or regarding any part or parts of machinery or electrical apparatus or wiring which is liable to get out of order on the road or during service.

(d) They will never attempt to do any work on motors unless the circuit through the car has previously been broken by throwing the main motor switch, the overhead circuit breaker or withdrawing the trolley from the wire; they will never do such work with any loose metal article in an upper pocket, which is liable to fall out and cause ultimate if not immediate damage.

(e) They will examine motor and journal bearings as often as may be possible and if too warm the fact must be promptly reported; the armature, field coils, diverter coils and commutator should never get so hot that it is impossible to hold the hand on them. Motormen must never try to run a motor that is seriously out of order, but shall promptly cut out the motor at fault.

76. When current is cut off between the power house and the motors the motorman shall throw the controller handle to the "Off" position and come to a stop to ascertain the cause; if in the day time he will turn on the light circuit to determine if the power is on the line. If the rail be dead or dirty and power is on the line, connection must be established with the nearest live rail and the wheel by the conductor, contact being broken with the wheel first to avoid a shock. Both controllers should be tried; if one works the trouble is in the other; if neither works, with power on the line, a fuse has probably been blown. In that event the conductor will remove the trolley from the wire or the motorman will break the circuit through the car before anything else is done, and then if on examination a new fuse is found to be necessary the motorman will remove and retain to be turned in the stubs or ends of the former fuse and, after placing the new fuse in position, set up the binding screws, holding it tightly in place, being very careful to secure a good contact at each end. Should the new fuse be blown the motor at fault, as designated by the position of the controller handle at which the blowing occurred, should be cut out. If both motors prove disabled so as to prevent the self-movement of the car the circuit must be broken through the car and assistance called for; in the case of a multiple-unit train, if the other motors in the train can propel it, the train will be moved in accordance with Rule 70.

(a) In case the power is cut off and the brake is found to be defective, the motorman before signaling the conductor to set the rear brake will set the reverse handle opposite from the direction in which the car is moving, throw the controller handle to the last position and allow it to so remain until the effect takes place, then, being careful to throw the handle to the "Off" position. Should this for any reason prove inoperative the motorman will promptly signal the conductor to apply the rear brake.

(b) The motorman must not reverse the power under usual running conditions; reversing is a severe strain upon the apparatus, especially when the car is under high speed. When necessary to reverse, and the car has been brought to a full stop, the motorman will return the handle to the "Off" position and apply the brake fully.

(c) When tracks are covered with water or slush motormen will run slowly and carefully, with power off where possible in order that the splash of the water may not cause a short-circuit in the motors or wiring of the car. They must never try to run through water so high as to touch the bottom of the motor-shell.

77. Before completing the circuit through the car on starting to work the motorman will see that the controller handle or cylinder indicator points to the "Off" position; main motor switch or overhead circuit breaker will then be closed and the brakes released before the power is applied to start the car. In starting at any time power should be applied gradually and fed with only proper speed in order that no damage may be done the equipment or injury caused to passengers by the sudden jolt. The controller handle must never be thrown on the last point if the car does not start on the preceding points.

(a) Motormen must conform to time table requirements as closely as possible, regulating speed in accordance therewith and with the limits of the time point cards. If a motorman should be delayed he will not undertake to recover the time lost in the minimum distance, but, IF IT BE ENTIRELY SAFE TO DO SO, he will run slightly faster during the entire run, aiming to reach destination or end of trip as nearly on time as may be possible.

(b) Motormen shall never run ahead of time unless directed to do so by an authorized officer of the company.

(c) On descending grades the motorman shall allow the car to coast as much as possible with power thrown off, always being careful to keep the car under control and never allowing it to run down hill faster than the motors will take it up the same hill. Coasting being good and economical practice, will be done wherever possible.

(d) In stopping brakes will be applied gradually to reduce the deleterious effect of a sudden retardation of motion in all service stops; just before the car or train comes to rest the brakes will be released slightly or partially kicked off so as to obviate the recoil that would otherwise ensue.

(e) Brakes must never be applied while the current is being used, nor current applied while the brakes are on; serious consequences are liable to follow disregard of this rule.

(f) When, on applying brakes, the wheels are felt to be slipping the motorman will release the brakes partially, start sand to running and again set up the brakes.

78. Motormen will sound the gong with a double signal when approaching a station, standing car (see rule 68a) or at any other times when necessary to call attention to the movement of the car; where air whistle is used this signal will be given thereon.

(a) Motormen will use particular care when approaching or passing schoolhouses or any other places where children are wont to congregate, having speed materially slackened and cars under control.

(b) Where streets are dug up or excavations are made under, alongside or near the tracks, motormen will observe particular care in running, taking no risks. In passing men at work in the streets or along the tracks particular care will be used.

79. Motormen will observe the minimum spacing distances as bulletined allowed between any two cars moving in the same direction on the same track.

(a) On limited curves (where two cars cannot pass) when two cars arrive at the same time the car on the outer track has the right of way.

(b) On double track lines a car will be run slowly approaching and passing a car in slow motion in the opposite direction.

(c) Motormen must throw off the power immediately before striking a curve, or before passing over or under any circuit breaker, special work, insulated joint, slip joint, frog or any similar mechanical contrivance.

(d) When any vehicle is seen in the track ahead or so close thereto that a car may not pass it the motorman shall slacken speed and not approach nearer than — feet until he has received the conductor's signal that the car will pass.

(e) Motormen will not run over any sticks, stones or other small obstructions on the rail, but will see that the track is at all times clear.

80. Motormen must never run against a facing switch point when meeting a car without first coming to a full stop and then proceeding only with the car under perfect control. This rule refers particularly to all crossovers and curves having switch points facing opposite to that in which the car is going.

(a) Motormen must not pass over any switch until they KNOW that the tongue is properly and fully turned, and then only at reduced speed. Particular care must be taken when switches are covered with snow or water.

81. Every motorman, after having run any car, whether for a day or but a single trip, will, upon being relieved and before leaving the depot, report the condition of the car or cars he has handled on the shop sheets provided; these sheets will show the run number and the motorman will enter thereon opposite his run number (or below the regular runs if he has been on an extra car) the number of the car

he had on that run or any part thereof on that day, any defect of the car or its equipment and sign his name thereto. No excuse will be accepted for failure to so report.

(a) When any motorman has any personal knowledge of an accident occurring in which any property may be damaged or any person or animal is likely to or may have been injured he will make prompt report of all the facts in the case to his depot immediately upon arrival at that point and soon as possible fill out in full and exact detail a blank form provided for his use in such cases headed "Motorman's Accident Report." If the motorman was a passenger on a car involved in the accident or a nearby witness of the occurrence or reaches the spot in time to do so, he will render every possible assistance to the crew of the car. If running a car that becomes involved in any disturbance or accident, he will see to securing as many names from witnesses to the occurrence from the sidewalk or adjacent stores as may be possible, giving such names to his conductor.

Respectfully submitted,

J. C. BRACKENRIDGE,

E. C. FOSTER,

T. E. MITTEN,

W. E. HARRINGTON,

Committee.

President Vreeland—Your President has had some conference with the members of the Committee on Rules. It seems advisable that the work of this committee should be done in a very thorough way, before any set of rules is adopted. The matter of framing a standard set of rules, as you gentlemen know, took a great deal of attention for many years in connection with the work of other associations. The New York State Street Railway Association has a committee now working on this subject, and that committee recently made a preliminary report at the meeting of that association held last month. It has been suggested that inasmuch as Mr. Brackenridge, of the Brooklyn Rapid Transit Company, has given up the operating department, that there be a substitution in his place, and that another gentleman be added to the committee so that the committee can go forward with the work during the next year. It is advisable, in the mind of the chair, that the same members of the committee, with additional appointments, should go ahead with the work this following year so that they will not lose the value of the work which they

have already done. It has been suggested that Mr. E. G. Connette, of Syracuse, be appointed in place of Mr. Brackenridge, which will make two members of the committee, Mr. Mitten, of Buffalo, and Mr. Connette, of Syracuse, working on this proposition, each being members of the Committee on Standard Rules appointed by the New York State Association, which will undoubtedly facilitate the work of forming a standard set of rules; and the chair will appoint as the Committee on Standard Rules for the ensuing year Mr. T. E. Mitten, of Buffalo; Mr. E. C. Foster, of Lynn; Mr. W. E. Harrington, of Camden, and Mr. E. G. Connette, of Syracuse; Mr. Connette to be the chairman of the committee.

Mr. John I. Beggs, Milwaukee—I would make a suggestion in connection with the work of this committee. I do it without any disparagement to those on the committee, but in the hope of hastening, if possible, the presentation of a report upon which action may be taken by this Association. There are a number of roads throughout the United States, among which is the road with which I am associated, that have been waiting for two or three years, at least, for the publication of rules to govern their employes, until this Association should have given the stamp of its approval to a set of rules that might give greater uniformity to the conditions under which our employes throughout the country work. I for one will feel compelled to take this report as a basis, or the report of the committee of the New York State Association, which I think is much better, and I say it without disparagement to this committee, because you will find in sections 52 to 55 of these rules as submitted a set of conditions—I do not know who is responsible for them—to conform to which would, in my judgment, make it impracticable to operate a street railway in any metropolitan city. These rules in question may be very well for an interurban line, but are absolutely impractical of application, in any city of any considerable size. I furthermore think that there should be some representative of this committee from a large western city, like Chicago or St. Louis. We know that in different sections of the country

there are different conditions confronting the operators of street railways, and this committee as organized is largely confined to the East. I am perfectly satisfied with the committee as it is now constituted, but I think there should be some one from Chicago or St. Louis, to give expression to their views in the formation of these rules. I have read the rules very carefully. The rules in Sections 52 to 55 inclusive, require a car to come to a full stop every time it passes another car; to come to a full stop before it crosses any other street railway intersection, etc. In a large city that would be absurd. It is absolutely impractical to carry out, and I cannot understand who would be responsible for rules such as these. I would like to suggest, without the necessity of making a motion, that the committee be increased by at least one other member, who should come, from, say, the city of Chicago. This would more nearly represent the practice throughout the West.

President Vreeland—The Chair will very gladly do what Mr. Beggs suggested. It has been the experience of your chairman in dealing with the subject for many years, and on other subjects handled by committees, that it has been wiser in appointing a committee, to appoint the members of the committee from some section of the country where the members can get together and hold a meeting. Questions connected with other cities, as a rule, can generally be covered in a satisfactory manner by correspondence; but inasmuch as the appointment of an additional member will not make any difference to the committee, the Chair will follow the suggestion made by Mr. Beggs and appoint Mr. Robert McCulloch, of Chicago, as an additional member of the committee.

On motion, the report of the Committee on Standard Rules as presented at this meeting was accepted.

President Vreeland—In order to dispose of the reports of the committees, as some of the members of the committees find it necessary to leave the city rather early to-day, we will have the report of the Committee on Standards, of which Mr. N. H. Heft, of Meriden, Conn., is chairman.

Mr. Heft then presented the report of the committee and said:

I think I state correctly that it is the unanimous opinion of the committee that this Association can adopt at this meeting the standards recommended by your committee. They are in line and in most cases an exact duplicate of the M. C. B. standards for rails, axles, journals, brasses, wheels, journal boxes, brake heads and brake shoes.

REPORT OF COMMITTEE ON STANDARDS.

Detroit, Mich., October 10, 1902.

The American Street Railway Association—

Gentlemen: The Committee on Standards, appointed in pursuance of the action of the last annual meeting of the Association, have given individually, at their homes, and collectively as a committee at meetings, considerable thought to the matters involved, and have carried on much correspondence in an earnest effort to obtain data which would enable them to present at this meeting of the Association ideas that would be of advantage to the electric ways throughout the country.

It is unnecessary, however, to suggest that because of the great changes and vast improvements being made in the type, design and construction of motors that it is difficult to make any definite recommendation upon this point, as we feel that the next year or two may radically change the ideas of the manufacturers as well as the operating departments of the several roads with relation to the matter of motors.

With regard to the matter of rails and trucks we present more definite conclusions for your consideration.

At the first meeting of the committee the subjects to be considered by the committee were divided and assigned to the members as follows:

N. H. Heft (Meriden, Conn.).—Wheels, axles, axle brasses, journals, journal-boxes, brake-heads, brake-shoes, etc.

John I. Beggs (Milwaukee, Wis.).—Rails.

E. A. Newman (Portland, Me.).—Motors.

E. G. Connette (Syracuse, N. Y.).—Trucks.

R. T. Laffin (Worcester, Mass.).—Painting.

Will Christy (Akron, Ohio).—Car bodies for city and suburban service, including ventilation; also the question of the oval roof.

C. F. Holmes (Kansas City, Mo.).—Standard overhead construction for high-speed city and suburban roads, including trolley wheels.

RAILS.

The committee having carefully considered this subject, and having consulted with experts, recommends that this Association adopt as a standard for either a "T" or girder rail, the form of rail shown in Figs. 1 and 2; the height of the rails to be governed by the character of the pavement required in the municipalities, and the weight of the rail to be not less than 70 lbs. for the "T"-rail and not less than 90 lbs. for the girder rail per yard.

It will be observed by examining these illustrations that the head of the rail is made to conform to the angle of the tread of the car wheels, for the following reasons. First, to increase the contact area, thus increasing the tractive force; and second, causing a more uniform wear across the head of the rail and tread of the wheel.

The width of this head should be not less than 3 ins. With a rail-head of this form and dimensions, a car wheel having a 3-in. tread and flange of $1\frac{1}{8}$ ins. in depth (which should be used on all suburban cars), can be operated without interfering with pavements, with safety, at a high rate of speed on suburban and interurban roads, and with less cost for maintenance than the present form, due to the increased surface contact between the wheel and rail and decreased wear on flange.

The committee is of the opinion that the "T"-rail is the most desirable and practicable rail for all purposes, and advises its use wherever the consent of the municipality can be obtained; and an earnest and persistent effort should be made on the part of all electric railways to obtain such consent.

In all places where a "T"-rail, as here described, cannot be used, your committee recommends a grooved girder rail of the form shown in Fig. 2. This form of rail, owing to the bearing being placed directly over the center line of web, gives a rail of greater stiffness, one with a head of 3 ins. in width, as well as a deeper and wider groove, and one which can be paved in the same manner as other girder rails.

In view of the rapid construction of suburban and interurban lines, which enter the cities over the tracks of city lines, the committee deems it advisable to recommend, in the renewal of special work where suburban or interurban cars are operated, and in all special work for new construction, that particular attention be given to the depth and width of the groove, as shown in Fig. 3, applicable to special work in connection with "T" or grooved girder rails.

MOTORS.

Street railway motors are subjected to such varying conditions and uses as to render it almost impossible to outline what might be

considered a standard motor. Neither would it be practicable to standardize certain horse-power motors for certain weights of cars, as the conditions of operation are so varied that what might be perfectly satisfactory in one case would be unsatisfactory in another. Generally speaking, for city service motors of between 35 hp and 40 hp are most practicable. For ordinary suburban service motors of this capacity, with four motor equipments, would meet nearly all ordinary conditions and requirements. For high-speed service on long suburban and interurban roads motors of greater capacity are desirable and should be selected with special reference to the specific duty to be performed.

As there is a possibility of alternating-current motors being developed the committee feels, in view of the experiments now being made both in this country and abroad, that it is advisable to await the outcome of these experiments before any recommendation on this subject is made.

TRUCKS.

Your committee is of the opinion that the time is inopportune for recommending any particular design of trucks for motor-car service, especially for single-truck cars, except such parts of trucks as wheels, axles, bearings and journal-boxes.

For interurban service the committee recommends that the standard dimensions, as given in this report for wheels, axles, bearings and journal-boxes be followed, and also that the M. C. B. practice in the construction of trucks for double-truck cars be adhered to as closely as possible.

AXLES, JOURNALS AND JOURNAL-BOXES.

In view of the great demand on the part of the traveling public for a more frequent and rapid service, not only in large centers of population, but in suburban and interurban service, and in view of the increased weights of the equipment required to safely perform this service, your committee recommends the standard axle adopted by the M. C. B. Association, which is the result of developments and improvements covering a period of fifty years. This standard axle can be applied to all electric railroads, which are now performing practically the same service as steam railroads.

We recommend for adoption an axle of the size and form shown in Fig. 4 for all motor cars weighing under 15 tons, including in such weight trucks, motors and car bodies and full load; also the M. C. B. standard journal-brasses, journal-boxes, dust-guards and key-seats shown in Figs. 4, 5, 6 and 7.

For all cars weighing from 20 tons to 28 tons, including in such weight trucks, motors and car bodies and full load, the M. C. B.

standard axle, also journal-brasses, journal-boxes, dust-guards and key seats shown in Figs. 8, 9, 10 and 11.

For all cars weighing up to 30 tons, including in such weight trucks, motors and car bodies and full load, the M. C. B. standard axle, also journal-brasses, journal-boxes, dust-guards and key-seats shown in Figs. 12, 13, 14 and 15.

For all cars weighing up to 40 tons, including in such weight trucks, motors and car bodies and full load, the M. C. B. standard axle, also journal-brasses, journal-boxes, dust-guards and key-seats shown in Figs. 16, 17, 18 and 19.

For all cars weighing up to 50 tons, including in such weight trucks, motors and car bodies and full load, the M. C. B. standard axle, also journal-brasses, journal-boxes, dust-guards and key-seats shown in Figs. 20, 21 and 22.

CAR WHEELS FOR SUBURBAN AND INTERURBAN SERVICE.

Your committee has taken up with operating managers the subject of car wheels for suburban and interurban service to centers of population over public streets, and finds that their views accord with those of your committee.

We recommend for adoption as standard a steel-tired wheel and a cast-chilled wheel, as shown in Figs. 23 and 24.

With a view to safety and economy we recommend for motor cars used in suburban and interurban service a steel-tired wheel of the dimensions shown:

For use with an axle as shown in Fig. 4, wheel to weigh 640 lbs.

For use with an axle as shown in Fig. 8, wheel to weigh 695 lbs.

For use with an axle as shown in Fig. 12, wheel to weigh 790 lbs.

For use with an axle as shown in Fig. 16, wheel to weigh 840 lbs.

And a cast-chilled wheel of the same dimensions:

For use with an axle as shown in Fig. 4, wheel to weigh 440 lbs.

For use with an axle as shown in Fig. 8, wheel to weigh 490 lbs.

For use with an axle as shown in Fig. 12, wheel to weigh 590 lbs.

For use with an axle as shown in Fig. 16, wheel to weigh 640 lbs.

Car wheels of the weights mentioned conform to the M. C. B. standards.

BRAKE-HEAD AND BRAKE-SHOE.

Your committee recommends for adoption as a standard the brake-head and brake-shoe shown in Figs. 25 and 26.

PAINTING.

As a standard method of painting cars your committee would recommend the following: All grease and rust should be removed

from the ironwork and the car body should be rubbed down to a smooth surface; then thoroughly paint the ironwork with pure red lead and raw linseed oil. Then the outside of car body should be painted as follows: First, pure lead and oil priming thoroughly rubbed in; second, one coat of flat lead, egg-shell gloss; third, white lead putty; fourth, three coats of flat lead; fifth, two coats of rough stuff; sixth, scour to smooth surface; seventh, two coats of ground color; eighth, special color to cover; ninth, ornament on flat color; tenth, two coats of best finishing varnish.

No coat is to be applied until the preceding coat is thoroughly dried.

The roof canvas should have three coats of lead and oil, and no glue size or patent filler should be allowed on the roof.

For the inside or standing finish, we would recommend that one coat of lead and oil and one coat of Prince's metallic be put on back of same before finish is put in place.

All standing or inside finish, if of open grain wood, such as ash, oak or mahogany, we would recommend to be thoroughly filled with Silex filler. If the wood is of open grain nature, such as cherry, maple or birch, we would recommend a good oil stain instead of the filler. Then thoroughly sandpaper, after which apply two thin coats of absolutely pure grain alcohol shellac, either bleached or orange, according to the wood. Then sandpaper and apply two coats of varnish. All inside work should be rubbed to a dead finish, and all outside or exposed work should be left in the gloss.

In car floors, the under or lining floor should have one good coat of oil before the upper or corrugated floor, which has received a coat of oil, is laid. When finished it should receive one coat of bleached shellac and one coat of good floor varnish.

RETURN CIRCUIT.

The committee believes that one of the most important factors in the construction and operation of an electric railway is to provide for a standard return circuit in such manner as to give the least resistance and largest and most reliable carrying capacity, thus avoiding loss of power and increased cost of maintenance. We, therefore, recommend a supplementary return, in addition to the usual practice at the present time, in all congested sections, crossing all special work and in the vicinity of the power plants.

STANDARD OVERHEAD CONSTRUCTION AND CAR BODIES.

Owing to the inability of the committee to obtain any report from the members to whom were assigned the subjects, "Standard Overhead

Construction for High-Speed City and Suburban Service, Including Trolley Wheels," and "Car Bodies for City and Suburban Service, Including Ventilation; also the question of the Oval Roof," we are unable to present any report embodying recommendations on these subjects.

CONCLUSION.

We earnestly recommend that the incoming officers of the Association be authorized and directed to appoint successors to the undersigned committee to carry on the work for which they were appointed, as we feel that the recommendations here made are only preliminary to much work that can be done in this direction.

Respectfully submitted,

N. H. HEFT,
JOHN I. BEGGS,
E. G. CONNETTE,
E. A. NEWMAN,
R. T. LAFFIN.

All of the following were adopted as standard construction by the American Street Railway Association, October 10, 1902, except Figure 3:

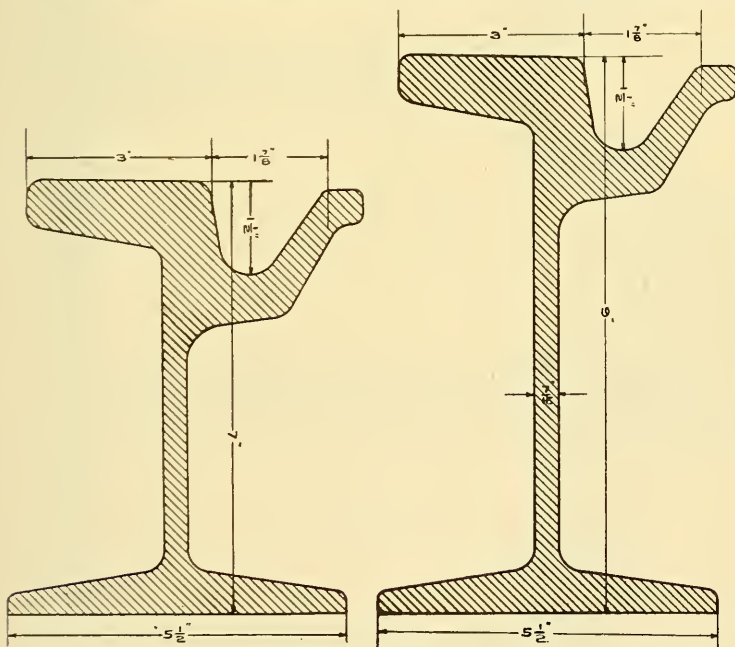


Fig. 1—Section of Grooved Girder Rail.

Fig. 2—Section of Grooved Girder Rail.

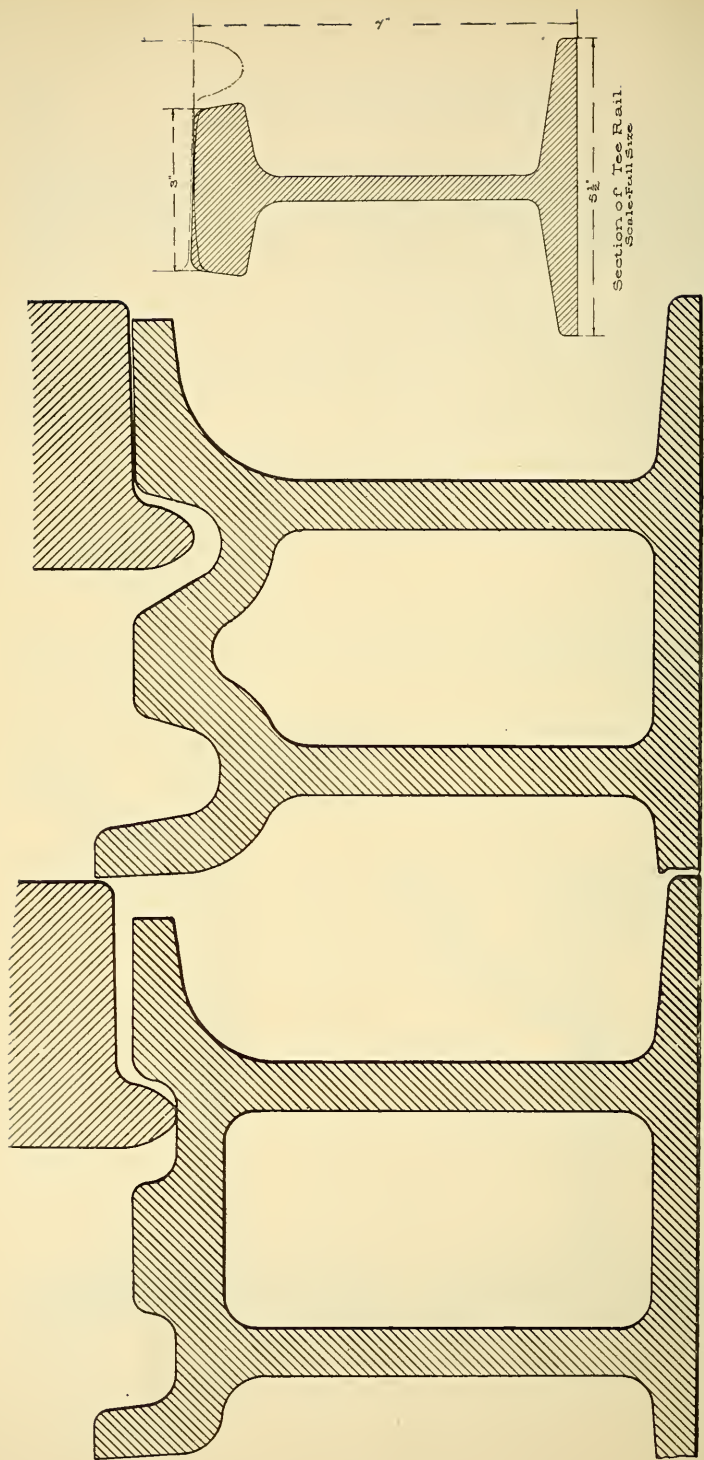


Fig. 3—Present Special Work Groove, showing Wheel Riding on Flange.

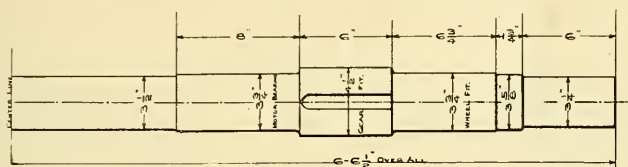


Fig. 4— $3\frac{1}{4}$ x 6 Axle for Cars up to 15 Tons.

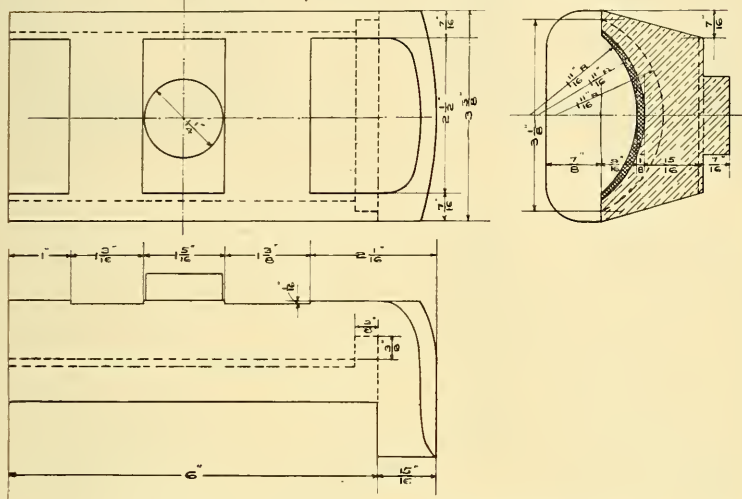


Fig. 5— $3\frac{1}{4}$ x 6 Journal Bearing for Cars of 15 Tons.

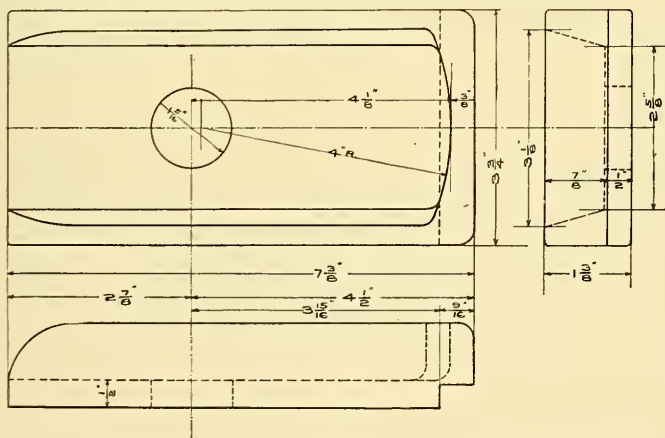


Fig. 6— $3\frac{1}{4}$ x 6 Journal Bearing Key for Cars up to 15 Tons.

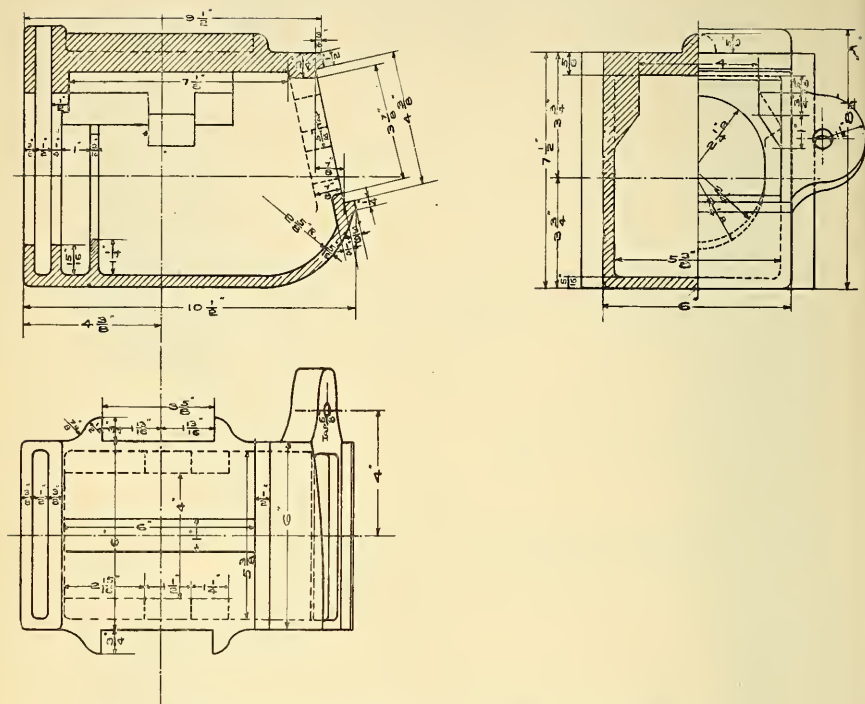


Fig. 7—3¼x6 Journal Box for Cars up to 15 Tons.

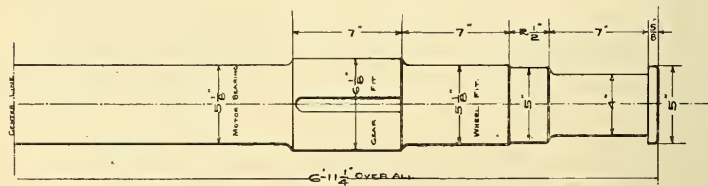


Fig. 8.—4x7 Axle for Cars from 20 to 28 Tons.

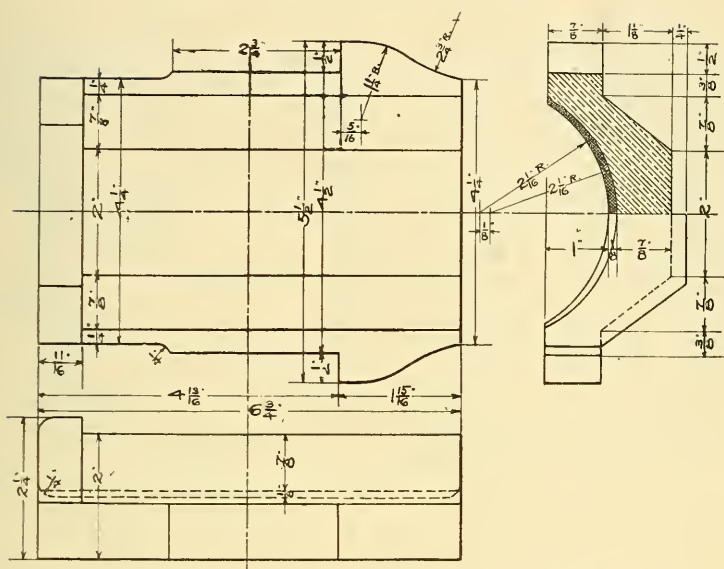


Fig. 9—4x7 Journal Bearing for Cars from 20 to 28 Tons.

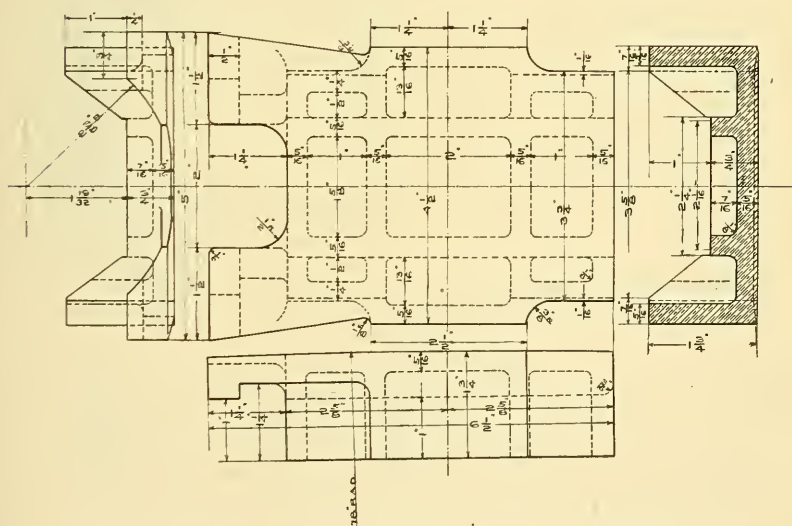


Fig. 10—4x7 Journal Bearing Key for Cars from 20 to 28 Tons.

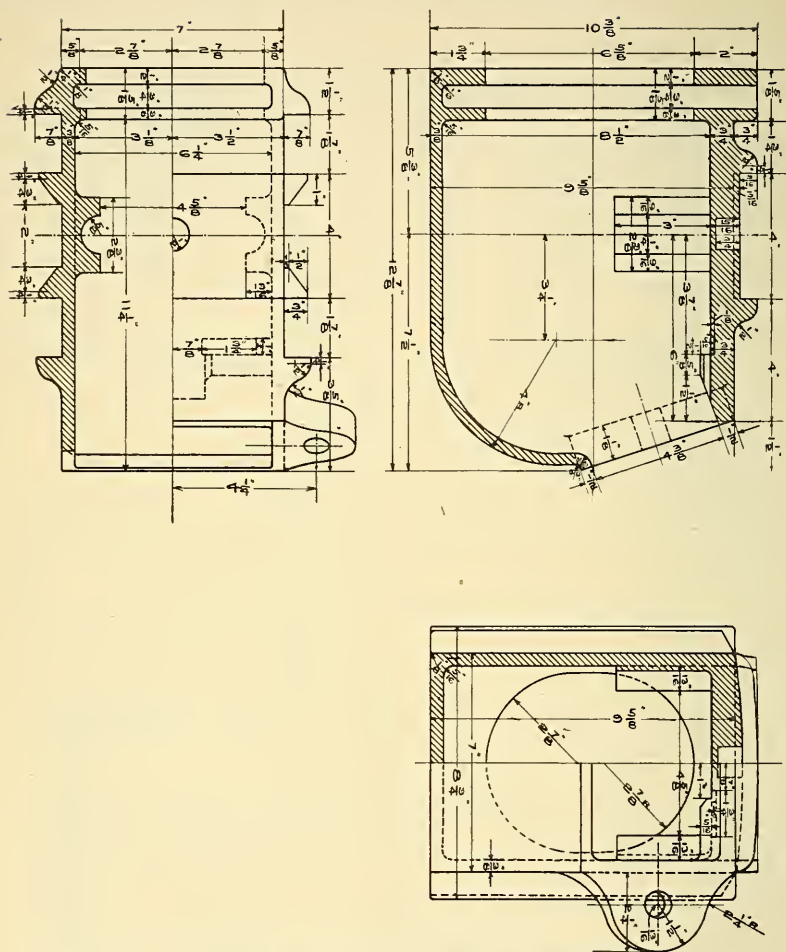


Fig. 11—4x7 Journal Box for Cars from 20 to 28 Tons.

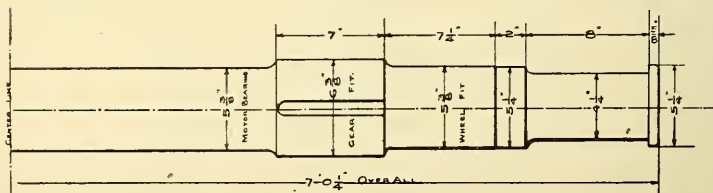


Fig. 12—4½x8 Axle for Cars of 30 Tons.

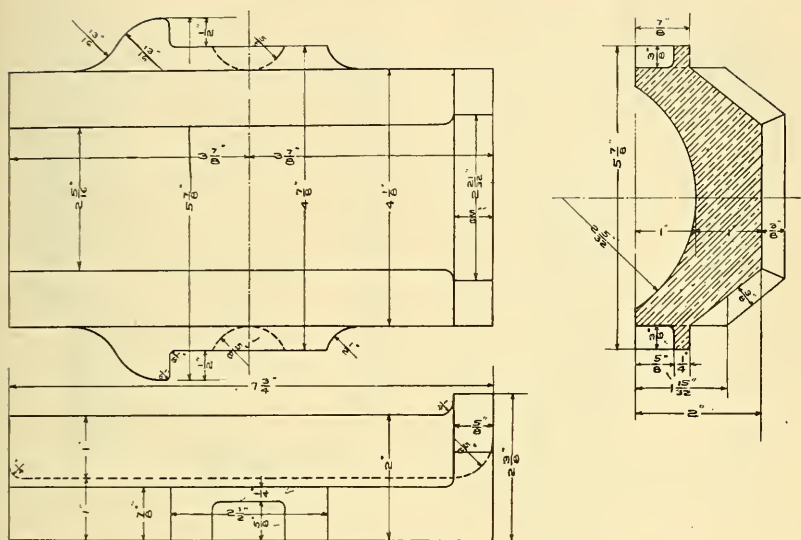


Fig. 13—4 1/4 x 8 Journal Bearing for Cars of 30 Tons.

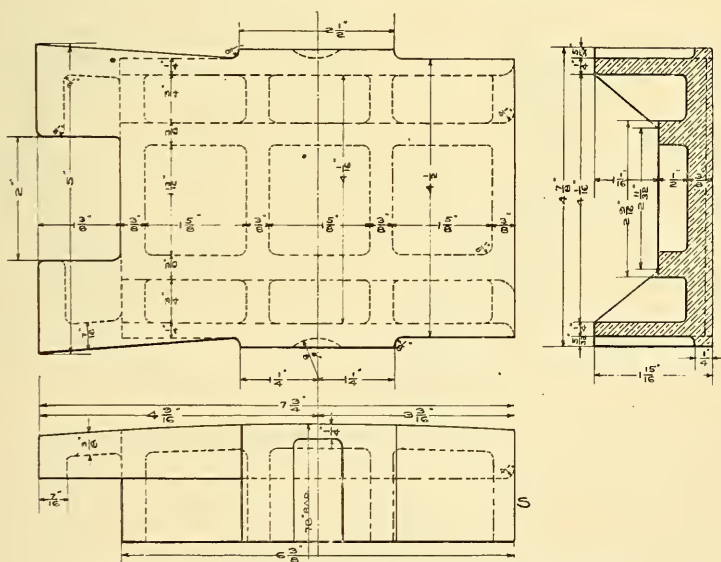


Fig. 14—4 1/4 x 8 Journal Bearing Key for Cars of 30 Tons.

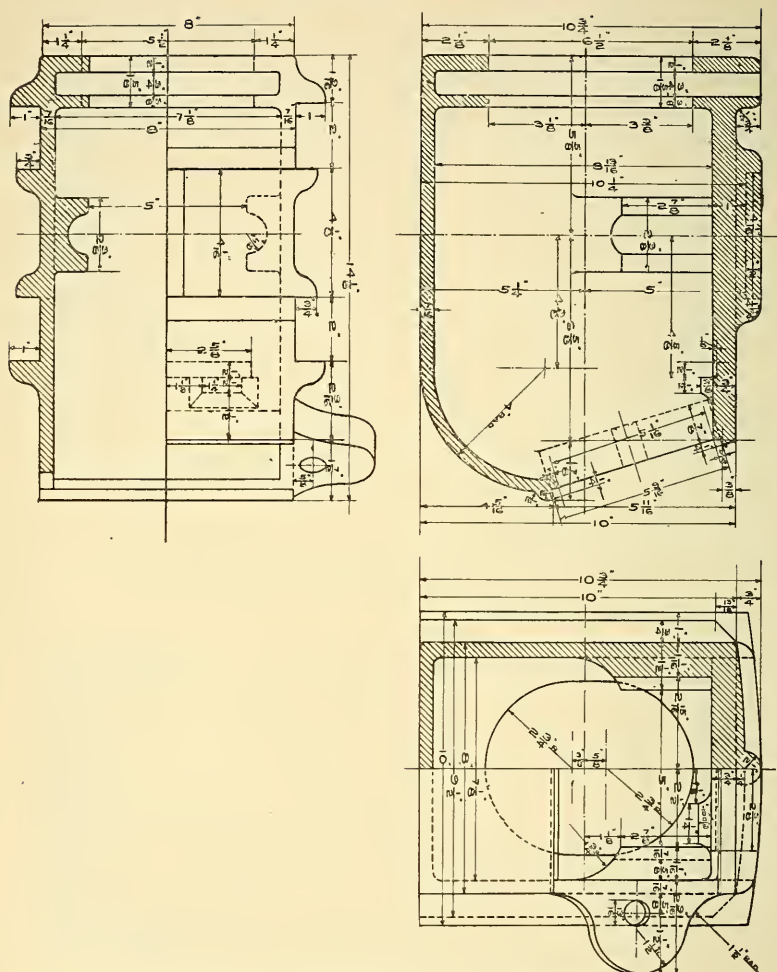


Fig. 15—4 1/4 x 8 Journal Box for Cars of 30 Tons.

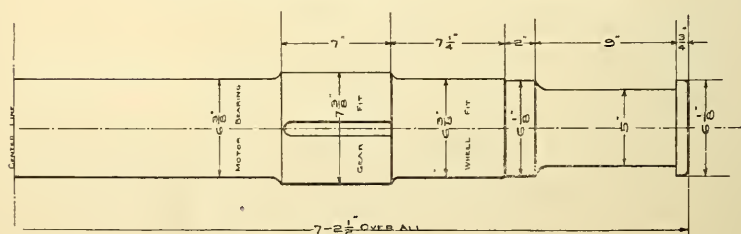


Fig. 16—5 x 9 Axle for Cars of 40 Tons.

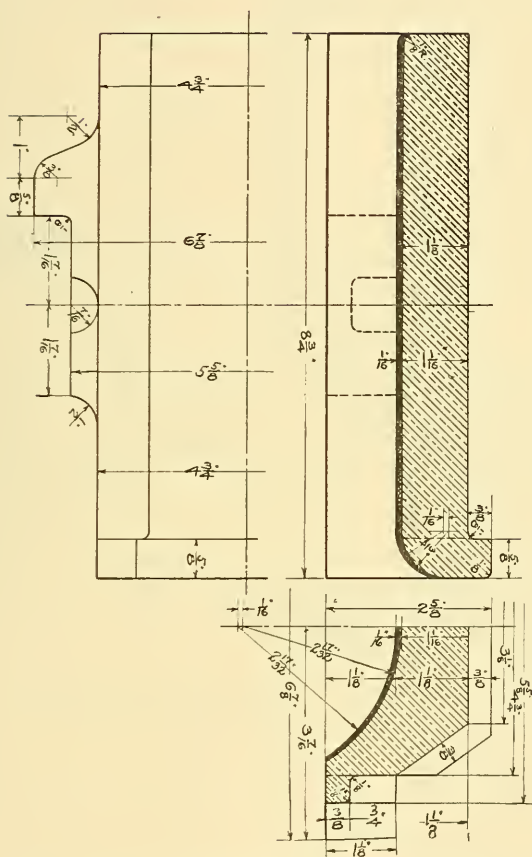


Fig. 17—5x9 Journal Bearing for Cars of 40 Tons.



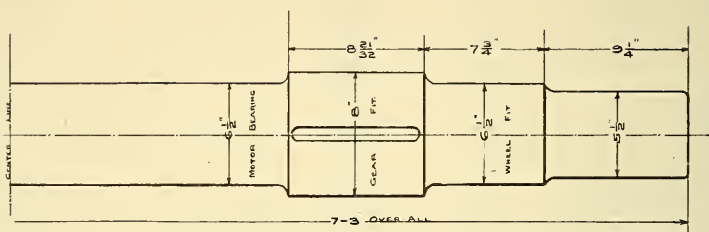


Fig. 20—5½x9 Axle for Cars of 50 Tons.

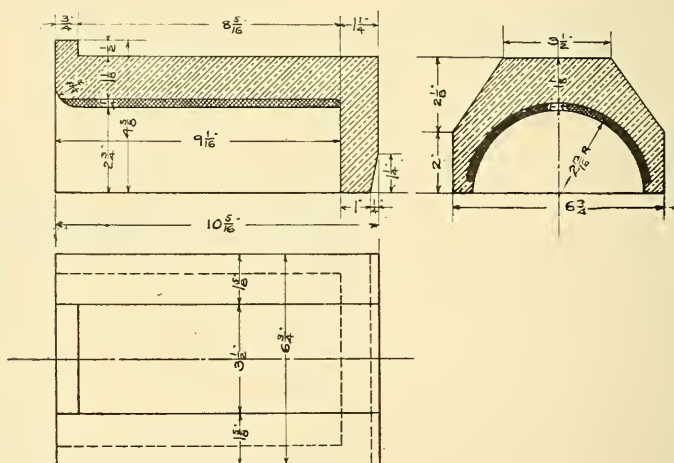


Fig. 21—5½x9 Journal Bearing for Cars of 50 Tons.

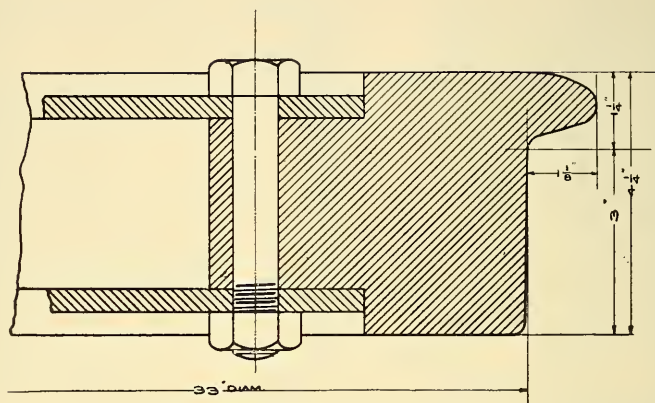


Fig. 23—Section of Steel Wheel.

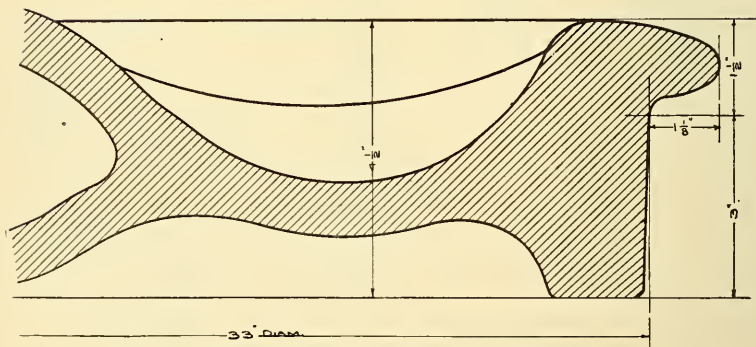


Fig. 24—Section of Chilled Wheel.

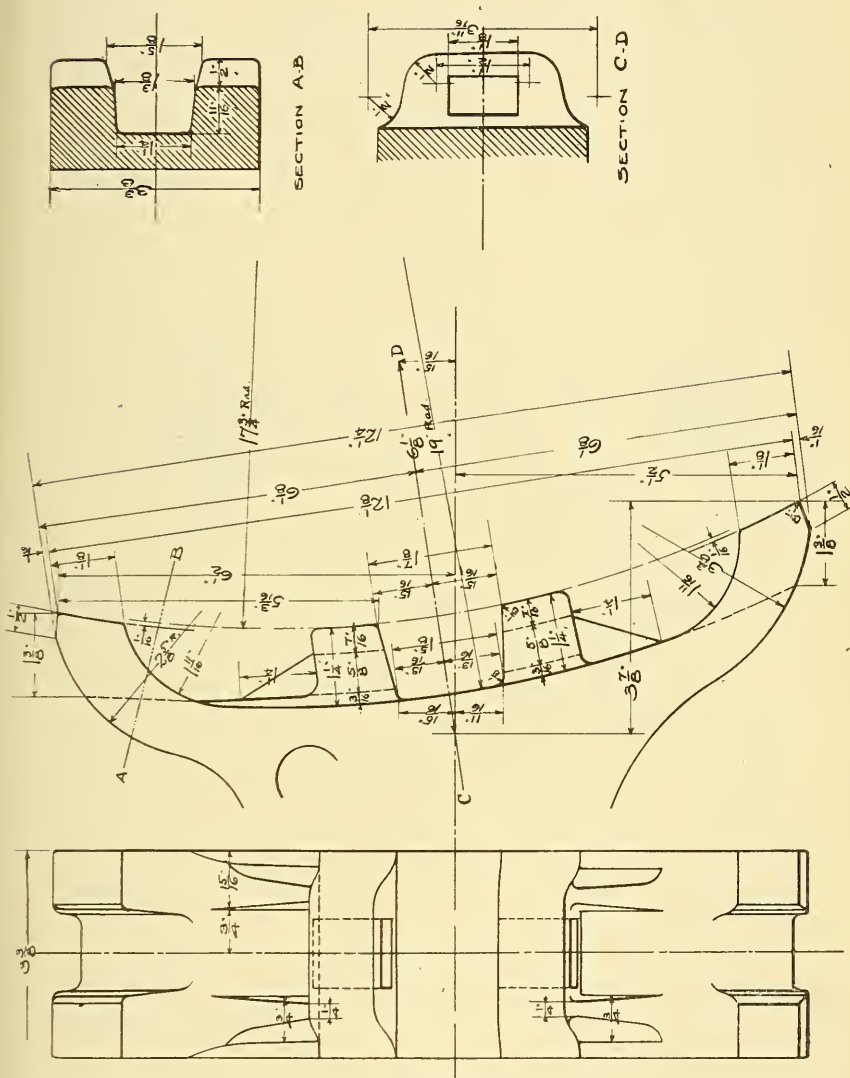


Fig. 25—Break Head Face.

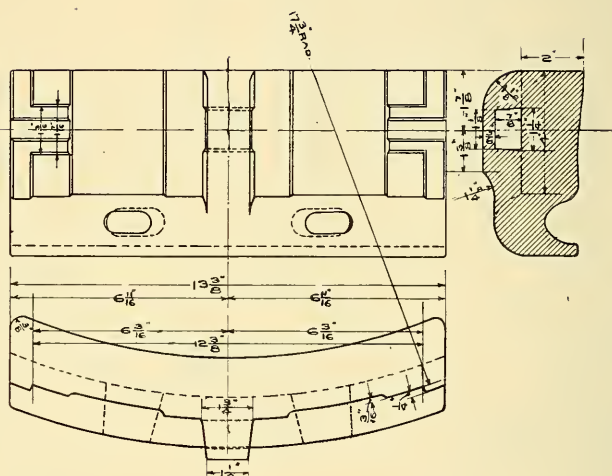


Fig. 26—Brake Shoe.

President Vreeland—Gentlemen, you have heard the report of the Committee on Standards. This committee was appointed for this important work with the full confidence of the Association in the value of their recommendations. There is no member who has to do with the larger questions connected with the present electric systems of operation, city, interurban and suburban, heavy city work as well as work outside of the city limits, but appreciates the fact that the standardizing proposition is an important one at the present time. In the light of the experience of the last half century of steam railroad operation, it is hardly worth the while of the members of this Association to go ahead spending money in as many different directions as there are managers represented, because the era of consolidation is at hand, not approaching, and we will find ourselves with many interurban roads, through consolidations, which will have as many different standards as the ideas of the managers handling the property.

You have heard the recommendation of the committee that this Association accept the recommendations contained in the report as standards, and inasmuch as the chairman stated that the standards selected by the committee are the established standards of the United States through the M. C. B. rules, it is hardly worth while to take up much time in the discussion of the report. However, the report is before you and the chairman will be glad to answer any questions. We would like to have any member who has anything to suggest to do so at once, as we have considerable work to get through with what we have to-day by an early hour this afternoon. If there is no gentleman who desires to discuss the report, a motion is in order that the report be received and the recommendations be accepted, and the full report on standards as recommended by the committee be printed in the proceedings of the Association. The Chair will be glad to have that motion made.

Mr. George W. Dickinson, Seattle—I make such a motion, that the report be accepted and printed for the information of the members of the Association.

Mr. Heft—I think it is in order that the matter should be disposed of in some way. If the Association wishes to be in line with the M. C. B. standard, it will be necessary to adopt the recommendations of the committee. I would also state that the committee asks to be discharged, and a new committee be appointed to continue the work.

President Vreeland—That will come up in another motion, and I would suggest, Mr. Dickinson, that you add that to your motion, that the committee be discharged with the thanks of the Association.

Mr. Dickinson—I add that to my motion.

Mr. Dickinson's motion was carried.

Mr. W. Worth Bean, St. Joseph, Mich.—Why not continue this committee in the work which it has been doing?

President Vreeland—It has been customary, and that is what was to be brought up next by the Chair, to leave to the incoming officers and Executive Committee of the Association the appointment of the committee, and the work has been so fully appreciated that each year the incoming officers have been glad to reappoint the same committee. To discharge the present committee rather leaves the hands of the incoming officers free for them to appoint all of the general committees of the Association. The conclusion of this report contains a recommendation that the incoming officers of the Association be authorized and directed to appoint successors to the present committee to carry on the work for which they were appointed, and the Chair would like a motion made to that effect; that is what we did last year, and the appointment of the Committee on Standards was one of the first duties which devolved upon the President and the Executive Committee after the adjournment of the Association.

Mr. A. E. Lang, Toledo—I move that the incoming officers and Executive Committee be empowered to appoint a Committee on Standards. (Motion carried.)

APPOINTMENT OF COMMITTEE ON RESOLUTIONS.

President Vreeland—I will appoint as a Committee on Resolutions Mr. W. Worth Bean, of St. Joseph, Michigan,

and Mr. G. W. Dickinson, of Seattle, Washington, to report at the session this afternoon.

We come now to the discussion of technical subjects. There was considerable inquiry as to what time the paper on steam turbines would come up, it having been put over until to-day on account of the absence of the writer. This paper, as well as all of the papers presented at this meeting, was put in the hands of the Secretary of the Association at an early date and they have been printed and distributed to all the members, so they have had an opportunity to look them over very thoroughly. For this reason, it is probably not necessary to have the paper read as a whole, but we would like Mr. Edward H. Sniffin, the author of the paper on steam turbines, to briefly state what points he would like to have brought out in the discussion. Mr. Sniffin is connected with the firm of Westinghouse, Church, Kerr & Co.

Mr. Sniffin—I do not know that there is much for me to add to my paper. I might say that while a good deal has been written on the subject of the steam turbine in the past, it has been almost entirely confined to its engineering aspect, dealing with its economical features and questions of design, construction, etc.; and I thought that at this meeting it would be more interesting if a paper was prepared upon the commercial aspects of the steam turbine, dealing with such things as its reliability, its economy, and also dealing with such features as the comparative costs of foundations, buildings, space occupied, also treating on the subject of its cost. I think those points have been practically covered by my paper, yet if there are any additional points to be brought up in discussion, I will answer any questions that I can.

THE STEAM TURBINE—ITS COMMERCIAL ASPECT.

The American Street Railway Association—

Gentlemen: The steam turbine is not as young as it looks. Although its application, in its present several forms, to commercial power generation, is the achievement of recent years, its principle is neither new nor novel, and it may be wondered that a century of effort should have been applied to the reciprocating engine—which became, indeed, more

complicated as it grew, before the primal theories of the heat motor assumed corporate, practical form. It is true that later knowledge of materials, and how to work them, has made the way clearer; and the wider use of the steam turbine has in a measure depended upon the development of electrical practice, with which latter it is now so intimately identified.

Much interest has for some time been centered in this type of prime mover and the possibilities of its application. The history of its development is quite generally known, and up to this time attention has been more particularly directed to its engineering and mechanical characteristics. It now seems appropriate to inquire into the controlling features of its commercial utility, and determine, if we may, whether the steam turbine, subjected to a somewhat careful analysis, is a machine still to be developed, though of ultimate promise, or whether it has been well tried and its advantages proved. What has it accomplished? What justifies its use? What otherwise unattainable results will it produce? What are its limitations? It is this aspect of the case on which the light is needed.

It is of little moment what the direct or contingent advantages of the turbine may be, if its reliability remain in doubt. Offered, as it is, in large units, and being apparently more related to the classes of service which impose the most exacting requirements, the demand is imperative that in this one vital respect there be little left to chance.

Before recurring to actual experience, it may be instructive to consider for a moment the general character of the turbine as a type of motor, contrasted with the piston engine. Fig. 1 shows the longitudinal section of the Westinghouse turbine. The steam entering the governor valve arrives at the chamber "A," then turns to the right, passing first a set of stationary blades, then impinging on the moving blades, driving them around, and so on, until it arrives at exhaust chamber "B." And here is an interesting lesson in physics—a demonstration of the conversion of heat into energy; for while the temperature of the inlet end is that of the entering live steam, the exhaust end, but three or four feet distant, is not so hot (about 126 degrees F.) but that one may bear the hand. The cut will show that the only real moving part is the spindle, revolving in its bearings, the governor mechanism and oiling arrangement being comparatively insignificant. The blades do not wear, as the steam velocity—some five or six hundred feet per second—is not sufficient to affect them. The blades are made of a special material, and are calked in such manner that the force required to pull them out would exceed the elastic limit of the material in the blades. They are subjected in regular practice to a strain of about one-fortieth of this amount. The actual pressure

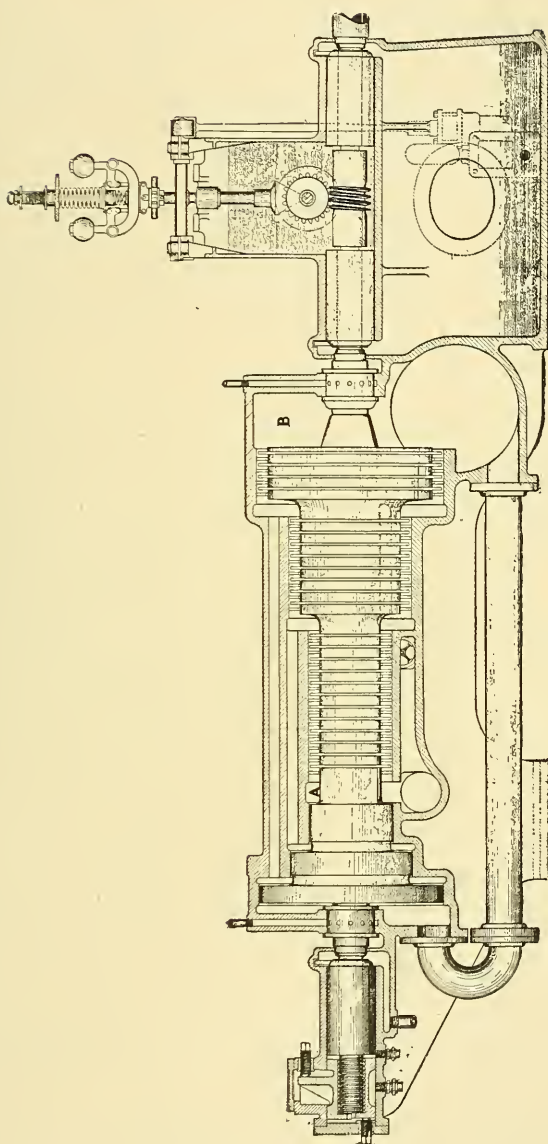


FIG. 1.

exerted on each blade is about one ounce. A complete description of the mechanism is not needed here.* It is sufficient to note its general character and to contrast its obvious simplicity and freedom from complication, with the recognized complexity of the piston engine. The inference is clear that in constructive opportunity, at least, the turbine should be the more reliable.

The steam turbine, before it had obtained any considerable recognition here, was not entirely without success abroad. Parsons and others had done much to prove its reliability. For instance, in 1897 the Newcastle & District Electric Lighting Co., operating eleven turbines of 75 to 150 K. W. each, showed their cost of repairs and renewals on their entire plant, including turbines, generators, boilers, condensers, pumps, fittings, cables, etc., to be 26-100 of a cent per K. W. per annum.

In this country the steam turbine is now operating in several plants. The first prominent installation was at the Westinghouse Air Brake Company's works, at Wilmerding, Pa., where the first unit was started in August, 1899, two more shortly after, and the fourth unit in April, 1901. Thus, the plant has been in service, for the most part, more than three years, and the fourth unit about eighteen months. The plant operates regularly eleven hours per day, the service being electric power and lighting. With the iron foundry running at night, one turbine is run 22 to 23 hours per day. In general, the units have run quite to their rated capacity—perhaps within twenty per cent of it, as a minimum. An interesting comparison has been made elsewhere of the efficiency of this turbine plant with the installation it supplanted, the latter comprising simple and compound engines; scattered about the works. After the three turbine units had been placed in operation, they were shut down and the steam engines previously in use (not yet disconnected from service) were again started up and a test made. A test was then made of the turbine plant. These were based upon a week's run, careful measurements being taken of fuel and water. The saving of coal in favor of the turbine plant averaged 35.7 per cent during the day, and 36.4 per cent during the night. The saving in feed water averaged 29.8 per cent during the day and 41.4 per cent during the night. In round numbers, this meant a saving of about 40,000 lbs. of coal per 24 hours. This improvement, of course, was attributable not entirely to the turbine itself, but also to the more efficient method of electric power transmission in comparison with the previous scattered arrangement of steam engines, with long runs of steam piping, use of belts, etc. It is, however, instructive

*See paper read by Mr. Francis Hodgkinson before Engineers' Society of Western Pennsylvania, November, 1900.

as indicating the results accomplished in a specific and prominent case, as between an old and still commonly used system of power transmission, and a modern method.

This plant at Wilmerding was the first of its kind. It naturally was not without its minor difficulties. The turbines themselves from the time of starting have been practically free from trouble of any kind. Some armature difficulties were at first experienced—not of enough moment to interfere with operation—and were readily corrected. Summing up the experience had with this first installation, undertaken somewhat experimentally at the time, the net result is that the plant has operated about three years in heavy daily service; that the work has not suffered interruption, and that the plant is to-day running with sustained satisfaction and with no visible signs of wear in any of its parts. Fig. 2 shows this installation, comprising four 400 K. W. units located within a space 45 by 61 feet, the height of the engine-room being 20 feet 6 inches.

The Yale & Towne Manufacturing Co., at Stamford, Conn., have a 400 K. W. steam turbine furnishing 240 volt, 2-phase current at 7,200 alternations. This outfit was started in operation February 1st, 1902. Since that time it has been in regular daily service, carrying about its rated load, operating 10 hours per day, furnishing current for electric motors and some lighting. Up to this time, therefore, it has been in service some eight months, and its mechanical operation has been most satisfactory. No quantitative tests have yet been made of steam performance, but there is general evidence of its economical operation. Fig. 3 shows the appearance of this outfit.

The Hartford Electric Light Co., at Hartford, Conn., have a 1,500 K. W., 2-phase, 2,400 volt, 60 cycle, turbo-generator outfit, which was started in April, 1901. This, at present, is the largest turbine yet installed in this country. Put in, as it was, to relay their water power, it has not been in constant service, but has usually been required but one or two days a week. At such times, however, it has carried the full station load of some eighteen or nineteen hundred kilowatts. Reference will hereafter be made to its striking economy.

A great deal of interest has centered in this early installation of a good-sized outfit in a prominent location, and its excellent performance is now generally well known. Some difficulties were at first experienced; nor were they entirely unexpected, for there had been no facilities, as there now are, for testing the outfit before shipment, and it was merely run at the shop without load. Before the machine was successfully in operation, one trouble that developed was with lubrication. The packing glands around the turbine shaft leaked somewhat, and the construction of the oil passages with reference to these glands enabled the oil to come into contact with the steam, im-

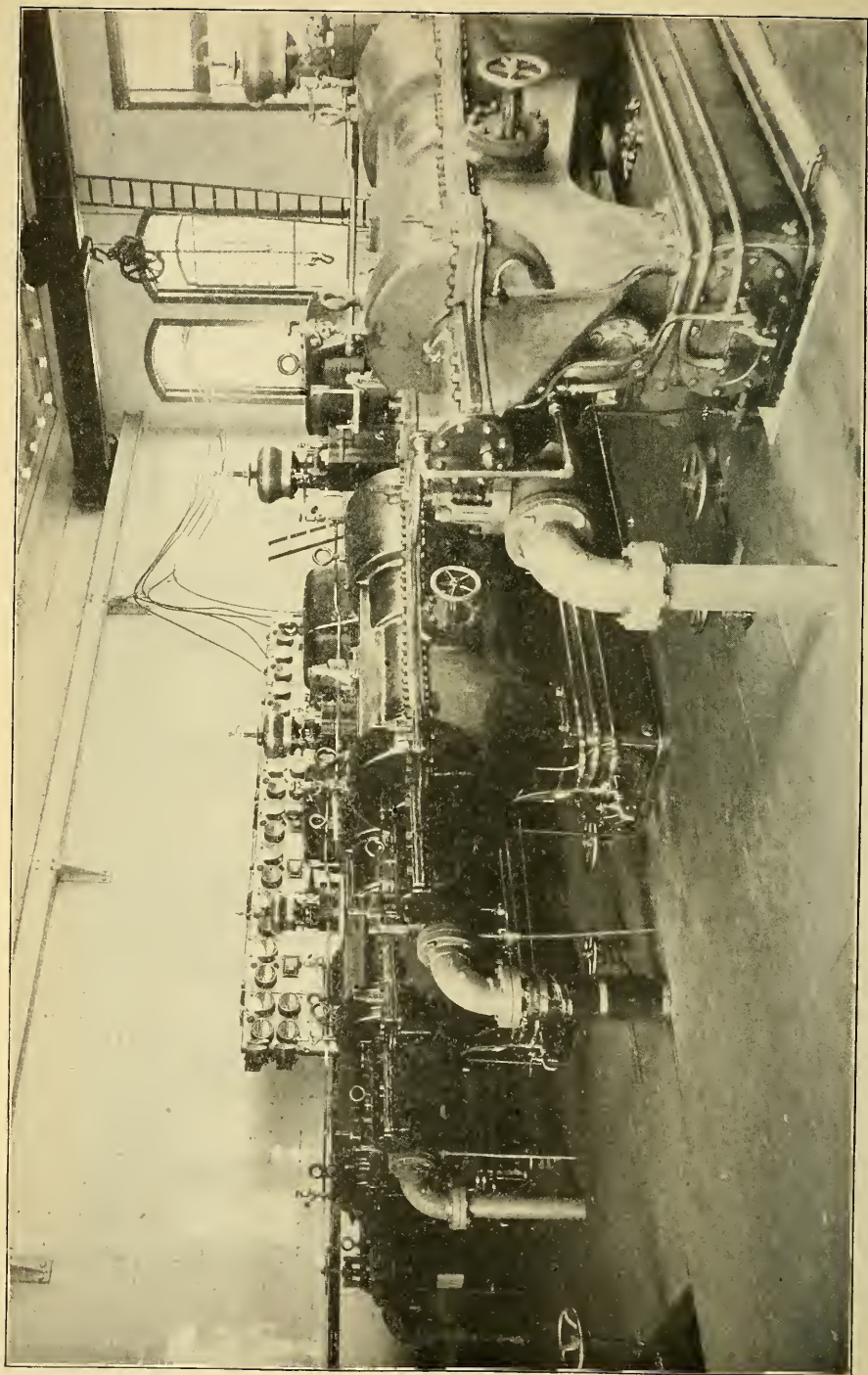


FIG. 2.

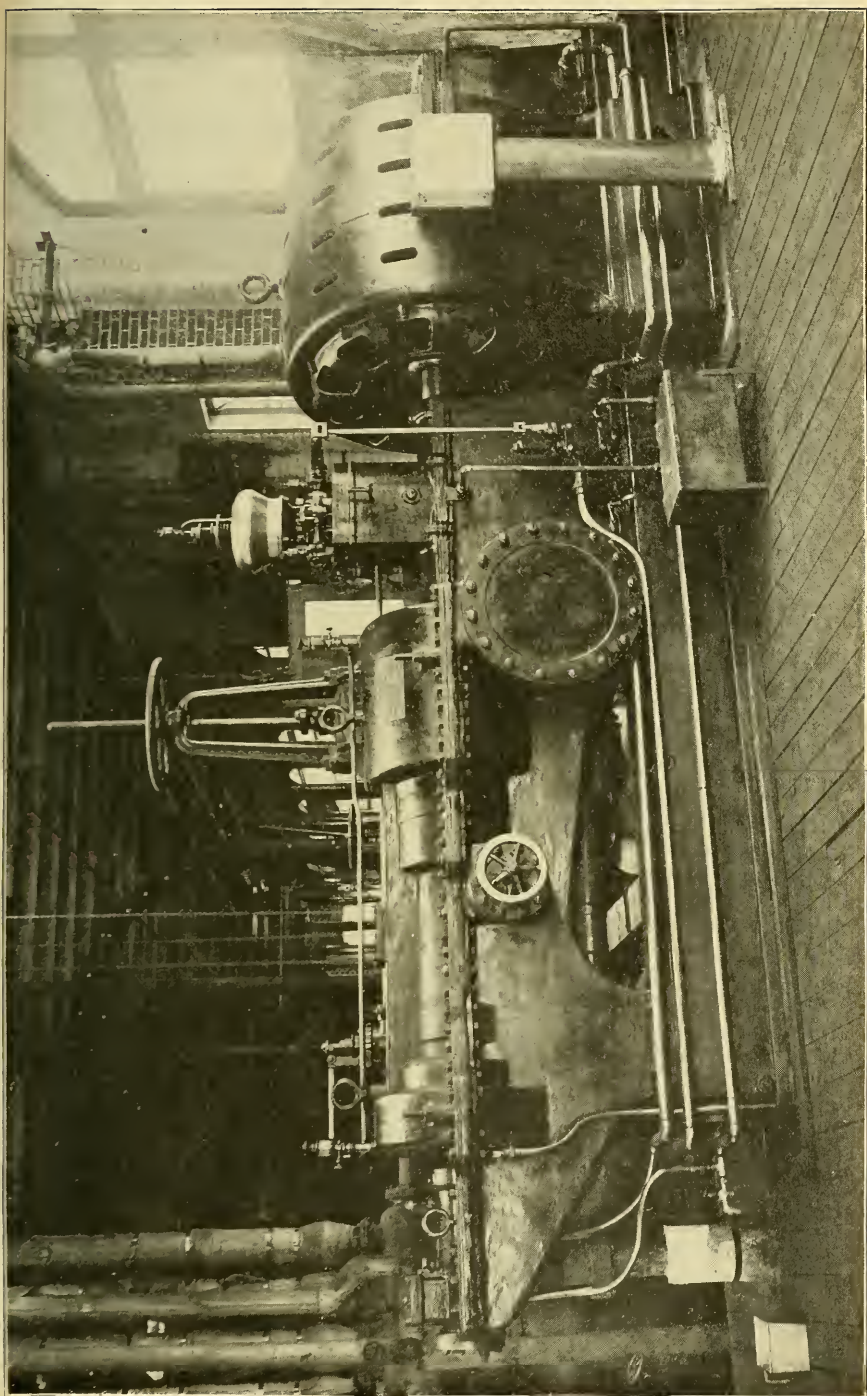


FIG. 3.

pairing its lubricating quality. This was easily overcome by modifying the vents and employing glands of different construction.

Some time was also required after erection to make necessary adjustments to relieve the turbine of longitudinal end thrust. This would have been corrected at the shop had the opportunity then been present for making complete test. It was found, too, that the shaft, which had been designed to afford the utmost ease of dismantling, was subjected to a considerable unevenness of temperature under superheated steam, and means were taken to make the temperature at all points more uniform. Having in due time overcome these local defects, which partook in no sense of functional fault, the turbine was then in serviceable condition, and its operation has since been most satisfactory. And the Hartford Company, notably alert to adopt the newer thing if there seemed advantage in it, have found when their water supply ran short that it paid to run the turbine and allow their Corliss engines to remain idle. This turbine is seen in Fig. 4.

Is the steam turbine efficient? And what, if it may be so termed, is the character of its efficiency? Is it, like the various types of piston engines, peculiarly fitted to certain conditions which permit of little change if economical performance be retained, or is there evidence that the turbine has a greater inherent efficiency that is less affected by attending circumstances?

The interest of engineers in the turbine has, perhaps, been drawn chiefly to the evident possibilities of its steam economy, and to the data already acquired, with the discussion it has provoked, much more of value will be added. We may in a general way, however, without referring to its thermodynamics, obtain from the evidence of actual results some knowledge of its efficiency and determine if the standards of present practice may not be improved.

It is well that the makers of the turbo-generator have been compelled to adopt the practice of basing the steam consumption on the unit of output, so that their guarantees are given on the electrical horse power or kilowatts delivered on the switch board, and not on the indicated horse power developed. This at once eliminates the factors of engine friction and generator loss, and thus more definitely establishes a measure of performance.

One is impressed with two distinguishing features of the turbine's steam efficiency, namely, that it seems to vary but little over wide ranges of load, and, further, that the size of the unit has comparatively little bearing. It follows, then, that if good results are possible at all, they are neither restricted to the larger plants nor to the requirement of steady load.

Fig. 5 illustrates this. Herein are given the results of tests on

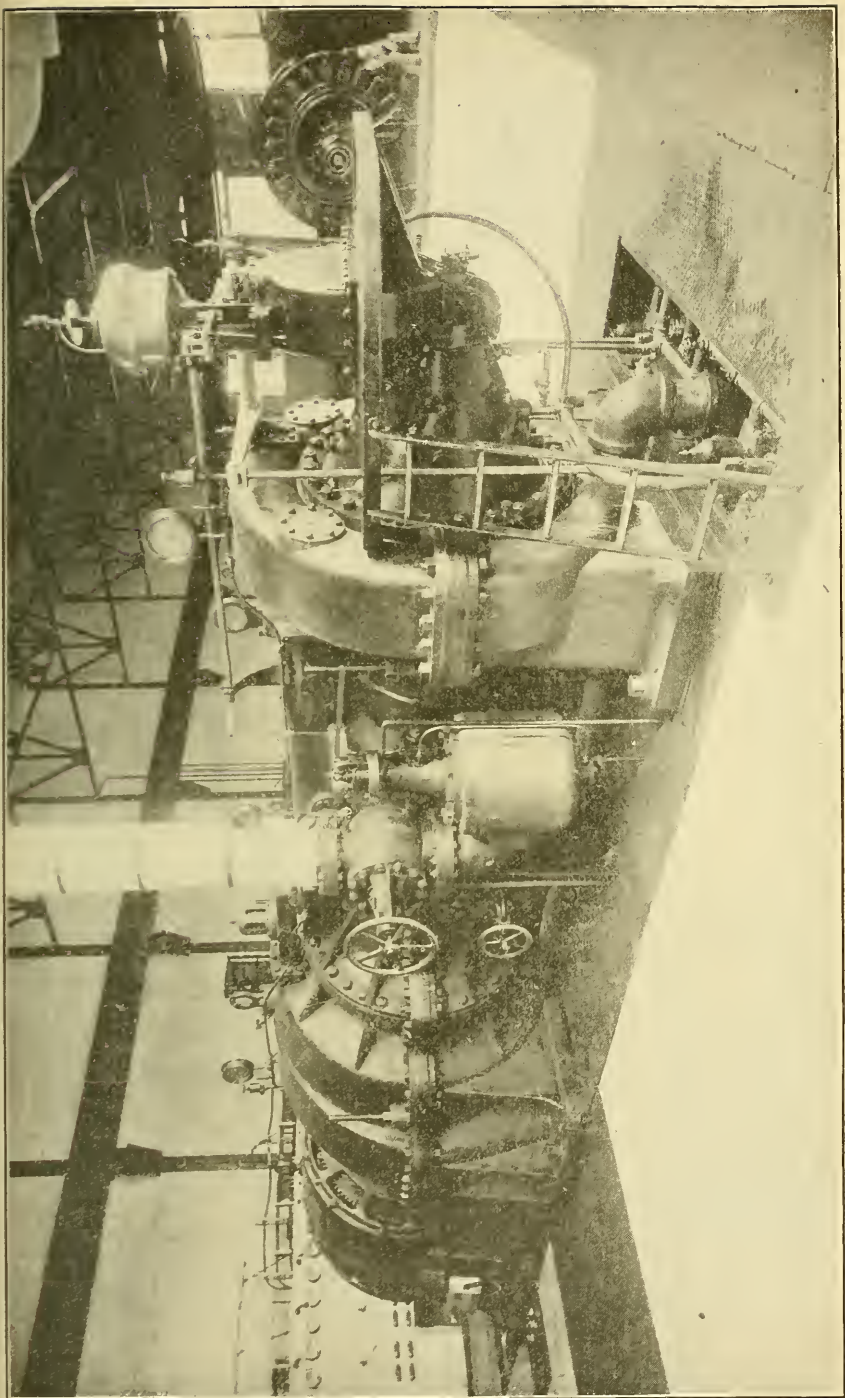


FIG. 4.

TEST OF WESTINGHOUSE-PARSONS STEAM TURBINE

NO. OF TEST	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
BOILER PRESSURE	148	147	147	152	149	149	148	149	148.5	150	155	148	149.5	153	150	150	148	152
VACUUM REFERRED TO 30 BARGHETER	27.4	28.04	27.95	27.06	27.35	27.4	27.2	26.7	26.7	27.37	27.54	27.3	27.3	26.94	27.35	27.5	27.3	27.3
% THROTTLE IN THE STEAM	2.3	2.3	2.35	1.6														
SUPERHEAT DEGREE					7	8	8	9	9	17	20	18	20	20	33	37	37	33
REVOLUTIONS PER MINUTE	3687	3621	3603	3615	3686	3635	3626	3637	3618	3688	3659	3625	3638	3630	3690	3630	3626	3642
TOTAL WATER	780.5	435.4	51576	9227.0	722.7	4507.0	55876	7658.0	9192.0	687.0	4321.0	5435.0	7249.0	8789.0	5045	4100.0	5129.0	718.5
BRAKE HORSE POWER	0	250.0	306.0	595.0	0	264.0	348.0	488.0	602.0	0	263.0	346.0	487.0	607.0	0	260.0	334.0	490
WATER RATE	17.4	16.8	15.5		17.05	16.05	15.45	15.26		16.43	15.7	14.85	14.47			16.13	15.35	14.67

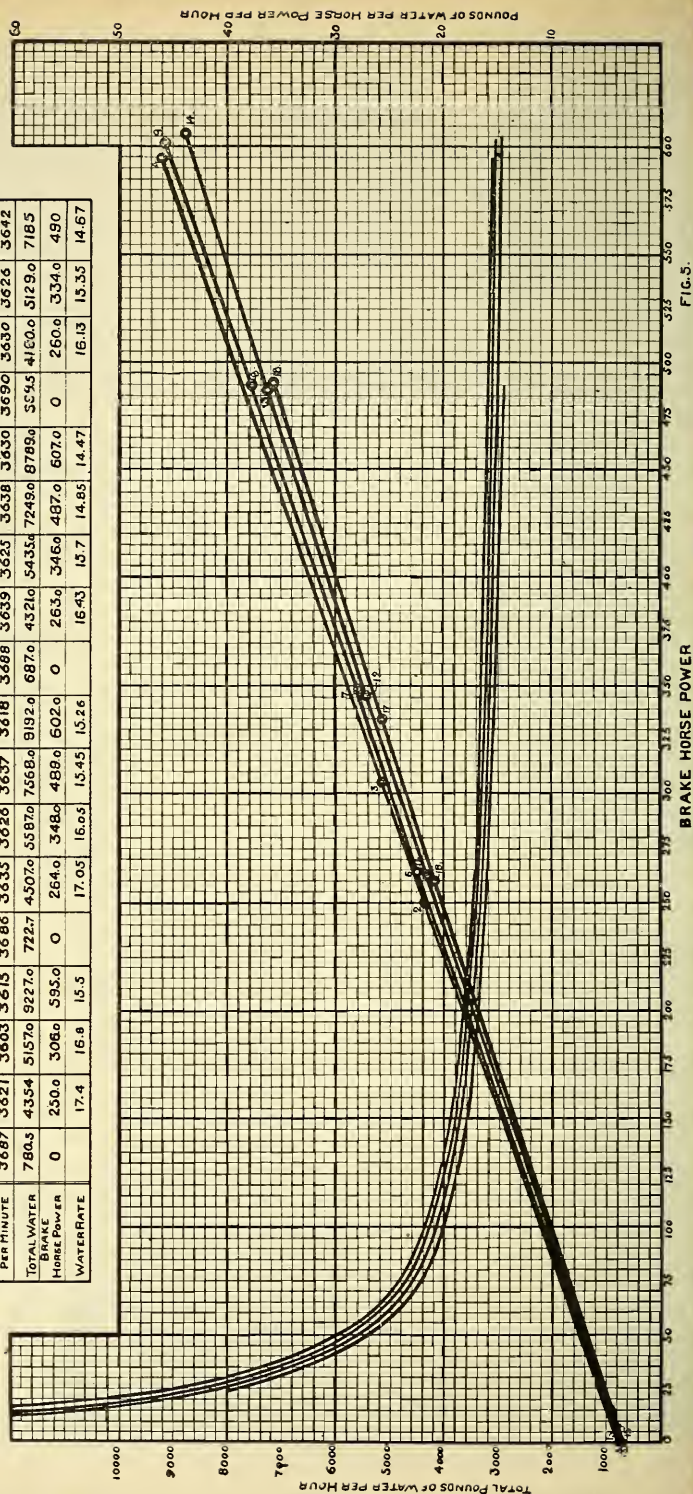


FIG. 5.

a 400 K. W. turbine, made at the builders' works before shipment; the machine having since been in daily operation some eight months. These tests were conducted under brake load, so that the figures are based on the brake horse power developed. The rated load would be about 600 B. H. P. The steam consumption curve is seen to be very flat, graduating from 14.47 lbs. at full load, to 16 lbs. at half rating, and to less than 19 lbs. at one-quarter capacity. The relation of the consumption of steam in pounds per hour to the brake horse power developed is also shown, this line being almost straight. In the tabulation may be observed the interesting comparative effect of vacuum and superheat.

If it is thus shown that with a unit as small as 400 K. W. we may obtain a result of 14.47 lbs. of steam per brake horse power per hour, corresponding to less than $13\frac{3}{4}$ lbs. per I. H. P., it is evident that moderate-sized plants may with the turbine be sufficiently subdivided to give the maximum flexibility of service, with insurance of relay, and yet possess an efficiency heretofore identified only with very large units. Further than this, a fluctuating load is not incompatible with high economical performance.

As the units become larger the turbine is then brought into comparison with the best steam engine practice, where it still preserves its uniform efficiency, and where its practical advantages are no less evident. In a recent instance, a result of 11.7 lbs. of steam per electrical horse power per hour was guaranteed on a turbine of 750 K. W. capacity, corresponding to about 10.17 lbs. per I. H. P., which, though the size is moderate, is perhaps within the ability of but few engines, of any size or type, that have ever been built.

It may be pertinent to cite a few results obtained in regular service. The turbine at Hartford, under test conducted by Prof. Robb, at an average load of 1,800 K. W., with 155 lbs. steam pressure, 27 inches vacuum and 45 degrees superheat, gave a result of 19.1 lbs. of steam per kilowatt hour; or an equivalent of about 11.46 lbs. per I. H. P. hour. An interesting comparison has been made at this plant of the relative efficiency, under regular operating conditions, of the turbine and their Corliss engines. They have one 18 and 34x48, and one 24 and 44x60 cross-compound horizontal Corliss engine. These engines drive direct by belt one 400 K. W. and one 600 K. W. generator. The turbine is, of course, direct-connected to its generator. They have made comparisons of operation based in each case on rather extended runs. It has been found that the turbine requires in delivering 1,900 K. W. on the board about the same amount of coal that is used with the Corliss engines to deliver 925 K. W., the steam pressure and vacuum being identical in both cases; and this with the engines running at about their point of best efficiency, and

known to be in excellent condition. Comparisons of this kind, while not scientifically exact, are perhaps of greater interest as a measure of commercial performance.

The data at hand of test on one of the 400 K. W. turbines at Wilmerding shows a result of 16.4 lbs. per electrical horse power hour at full load, with 125 lbs. steam pressure and 26 to 27 inches vacuum. At half load it is 18.2 lbs.

At the Elberfeld Municipal Electricity Supply Works in Germany, two 1,500 horse power Parsons turbines, which are run in parallel with two Sulzer horizontal engines, were tested by Prof. Schroter, Dr. Weber and Mr. Lindley. With steam pressure averaging 95 lbs., running condensing, and with 18.3 degrees of superheat, the result obtained, at maximum load, was 19 lbs. per K. W. hour; or about 11.4 lbs. per I. H. P. hour.

Many other results have been recorded, but those given will probably be sufficient to show that under service conditions, the turbine has demonstrated its high efficiency.

But is its efficiency maintained? A question often asked, and a very important one, too. Looking at the turbine casually, it seems as though there would be little opportunity for any change in its mechanical functions. There is no complicated valve gear to get out of adjustment; no pistons to leak; no rubbing surfaces to set up excessive friction; little chance of misalignment; and altogether there seems to be no good reason why its original condition should ever be very much disturbed. The blades appear to be the vulnerable point, for they do the work, and there are a good many of them. Their number, though, is in their favor, and being loaded as they are to only about $2\frac{1}{2}$ per cent of the pressure they are built for, they possess an abnormally large factor of safety. The experience has been that the turbine is less liable to depart from its original standard of performance than any other type of prime mover, and there seems little reason to suppose that it is capable of much deterioration.

A recent interesting investigation along this line was made at the plant of the Cambridge Electric Supply Co., Limited, in England, where they have a 500 K. W. Parsons turbine. The outfit was erected in January, 1900, and during the past year has been doing very constant work. After it had operated about eight months, a second one was installed. The first outfit had been tested at the maker's works before shipment and showed a result of 24.1 lbs. of steam per K. W. hour at 526.4 K. W. And it was for the purpose of noting its performance after a year's operation that Prof. Ewing conducted recently a second test.* In this latter test the turbine at 518 K. W., under

*London Engineering, June 14, 1901.

nearly equal conditions of steam pressure and vacuum, gave a result of 25.0 lbs., and at 586 K. W., 24.4 lbs. In the second instance the turbine, besides trouble experienced with wet steam, was driving its own air and circulating pump (a surface condenser being used), and the steam required to drive these auxiliaries was charged to it. In the test at the builders' works, the turbine did not drive its pumps. The results, to use Prof. Ewing's words, give most satisfactory evidence that the turbine retains its character as a highly efficient generator.

It remains to be said in this general connection that there will be found in steam turbine practice a more satisfactory treatment of the economy question than has heretofore prevailed. There will exist not only a truer basis of measurement than the indicated horse power, but there will be opportunity for more thorough demonstration. It is now generally recognized that efficiency guarantees on large engines have little significance. The builder is physically unable to completely assemble and test such engines before shipment, and the user is seldom able or disposed to incur the distraction and expense which a field test involves. It is in the exceptional case, therefore, that actual tests are made, and there is still much to be known concerning the economy performance of large engines. It might be said too, that while builders and engineers generally recognize the elements of design that conduce to efficiency, there is no unanimity of opinion as to what those elements will actually produce.

It is, therefore, gratifying to know that one builder, the Westinghouse Company, is now erecting a new testing room in which a complete plant of boilers, condensing and superheating apparatus will afford facilities for testing turbines up to 3,000 horse power, at all loads up to full capacity, and larger units up to this point, with practically any steam pressure and wide ranges of vacuum and superheat. Thus, the conditions to be met in practice may be approximated in the shop, and the information acquired will be of the highest value.

Turning now to one notable feature of the turbine—its compactness—Fig. 6 is a graphic illustration of the floor space it occupies, compared with the vertical and horizontal cross-compound Corliss engines, the basis of comparison being a 1,000 K. W. unit, including the direct-connected generator, the engine cylinders being 28 inches and 55 inches by 48 inches stroke, which, at 95 revolutions, with 25 lbs., mean effective pressure referred to low pressure cylinder, gives about 1,400 indicated horse power. It will be seen that the floor area of the turbine is about two-thirds that of the vertical engine and about two-fifths of the horizontal. Such comparison, of course, is



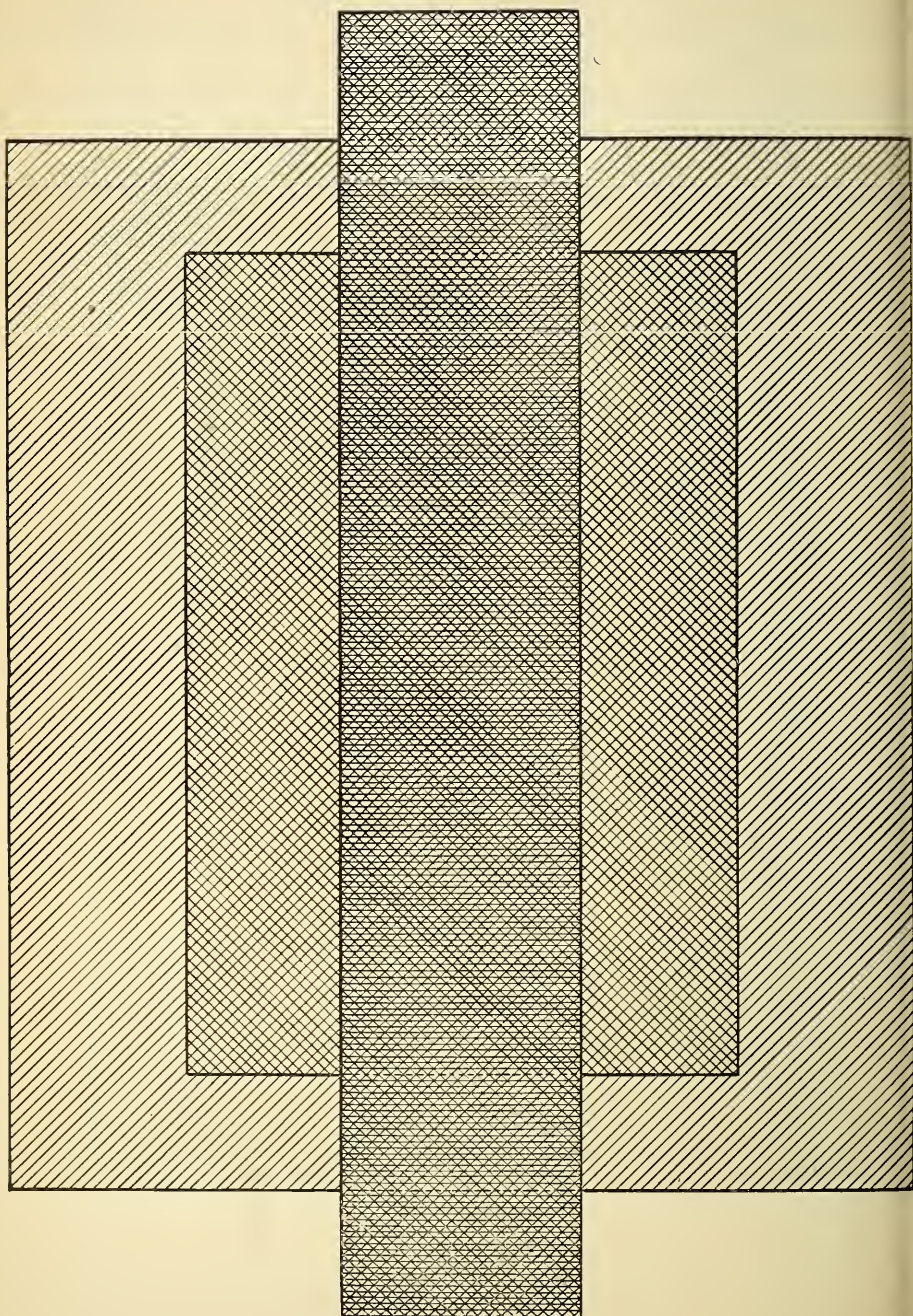
VERTICAL

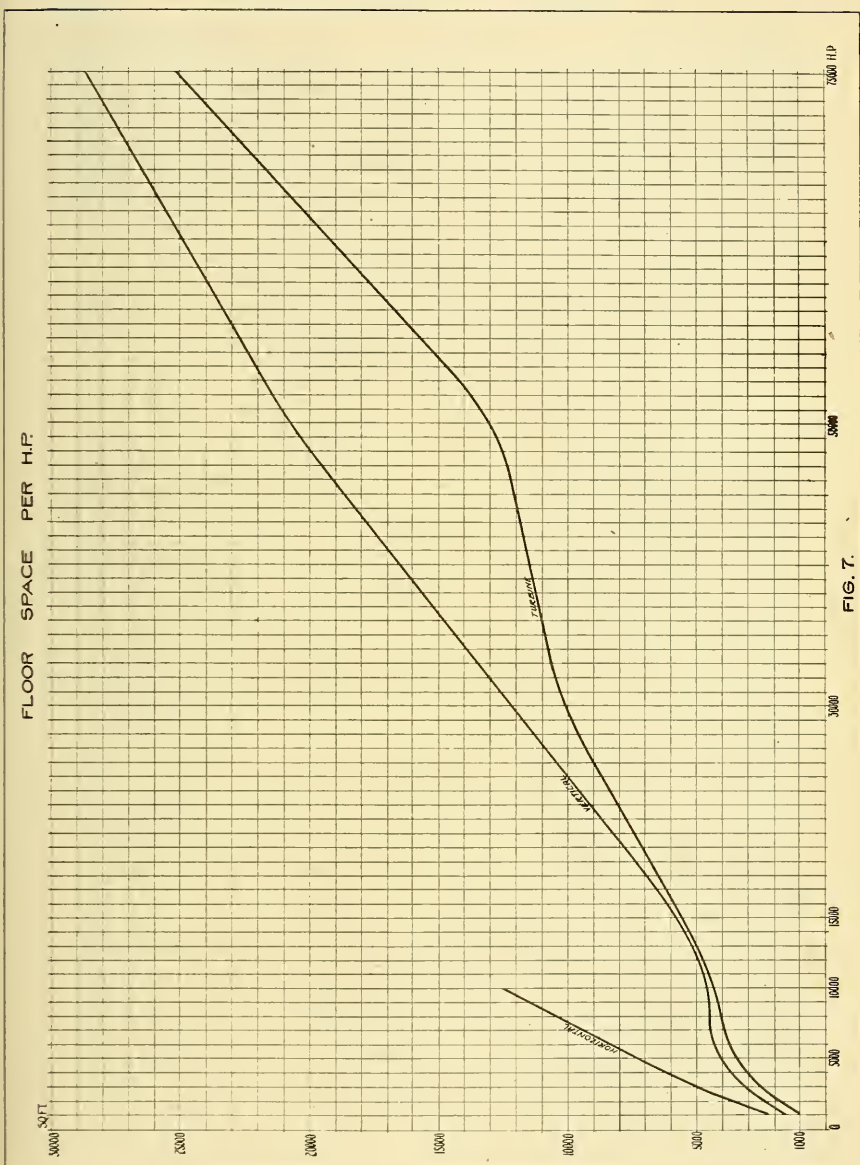


HORIZONTAL



TURBINE





limited in its application. With each set of conditions requiring special treatment, no standardization of space requirements can be established. Still, with the limitation of isolated experiences, it is possible without attempting to establish any universal laws, to make some reasonably close comparisons of the space required for the turbine as against the conventional types of engines. It has been thought desirable, then, to take a number of different-sized plants, each composed of several appropriate-sized units, the selections being as follows:

1,000 horse power	in	2—	400 kilowatt units.
3,000 horse power	in	3—	750 kilowatt units.
5,000 horse power	in	4—	1,000 kilowatt units.
*10,000 horse power	in	3—	2,500 kilowatt units.
15,000 horse power	in	4—	2,500 kilowatt units.
30,000 horse power	in	4—	5,000 kilowatt units.
50,000 horse power	in	7—	5,000 kilowatt units.
75,000 horse power	in	10—	5,000 kilowatt units.

These combinations were laid out for the turbines, and for the vertical and horizontal cross-compound Corliss engines, all with their direct-connected generators. A clearance space of 7 feet in all directions was allowed, and is probably a fair average. The computations were confined to the units themselves, with the clearance stated; the disposition of the balance of the plant being assumed to be unaffected by the type of motive power.

Fig. 7 shows the comparison of floor space. The curves show the turbine to require about 80 per cent of the space needed for the vertical, and not over 40 per cent of that wanted for the horizontal. In this diagram the vertical engine compares less unfavorably with the turbine than might generally be supposed, while the horizontal engine curve is about where one would expect to find it. The latter is not carried beyond 10,000 horse power, this type of engine being practically limited in size to that required for the 1,500 kilowatt generator.

Fig. 8, showing the cubic yards of foundation material required, is at the same time a more exact and striking comparison. The turbine would appear more advantageously still if the actual foundations needed for stability had been computed. Instead, the foundations in all three cases were figured at 15 feet depth to give space underneath engine-room floor for condensers, etc., though for large engines this depth is usually inadequate. The only foundation needed for the turbine is that necessary to hold its weight, as though it were a tank, or some other stationary affair. It does not even require foundation bolts, there being no vertical or horizontal thrusts to be resisted. Com-

*In this size the horizontal engine is figured on 5—1,500 kilowatt units.

paring again the 1,000 K. W. units, it is found that in actual foundation volume required, the ratio of the turbine to the vertical and horizontal engine is that of 1 to 9 and 15, respectively.

In Fig. 9 will be observed the comparison of engine-room building space, in which the turbine appears to hardly less advantage, though in this diagram the horizontal engine, gaining in head-room what it lost in floor space, compares more favorably with the vertical. In plotting these curves sufficient head-room was allowed to accommodate a crane, leaving adequate clearance for handling any part.

Having noted, then, the marked advantage which the turbine appears to offer by virtue of its compactness, it would seem that the comparison might be carried a little further, and with assumed valuations of masonry work and building construction, as well as of land, the money-saving to be effected in these important features of initial cost be defined.

Still adhering to the same plant size and combinations of units, in Fig. 10 is found the comparative cost of foundations; the basis assumed being \$7.00 per cubic yard for concrete, laid. It will be seen that while the turbine seems to average a foundation cost of about 50 cents per horse power, the vertical engine in the more frequent sizes is approximately \$1.50, while the horizontal is not far from \$2.50, not forgetting that all three foundations are figured of equal depth—15 feet—to provide space below, as above stated. In the instances where special foundation work is required, such as piling or otherwise preparing suitable bottom, or shoring up building walls to enable sufficient depth of excavation, the expense avoided by the use of turbines is obvious.

In Fig. 11, showing comparative engine-room building cost, the basis assumed is 15 cents per cubic foot of space inside of walls. Building construction necessarily varies widely with the size, design and materials employed, but the figure taken is perhaps not far from a fair average for building built of brick, with steel trusses and fire-proof covering. The curves show that the building cost for the turbine is about one-half of what is required for the horizontal or vertical engine, the latter two, apparently, not being far apart. In this comparison of building cost, experience would differ widely. Architectural considerations and local conditions would produce varying results. Exigencies would, however, favor the turbine because of its smaller size and rectangular proportion, and it not infrequently happens that increased power may be supplied by locating the turbine in existing space, whereas an engine would necessitate building extension and perhaps the purchase of additional land. An instance of this kind arose at Akron, Ohio, where in the existing space no arrangement could be devised to accommodate additional engine power. It was

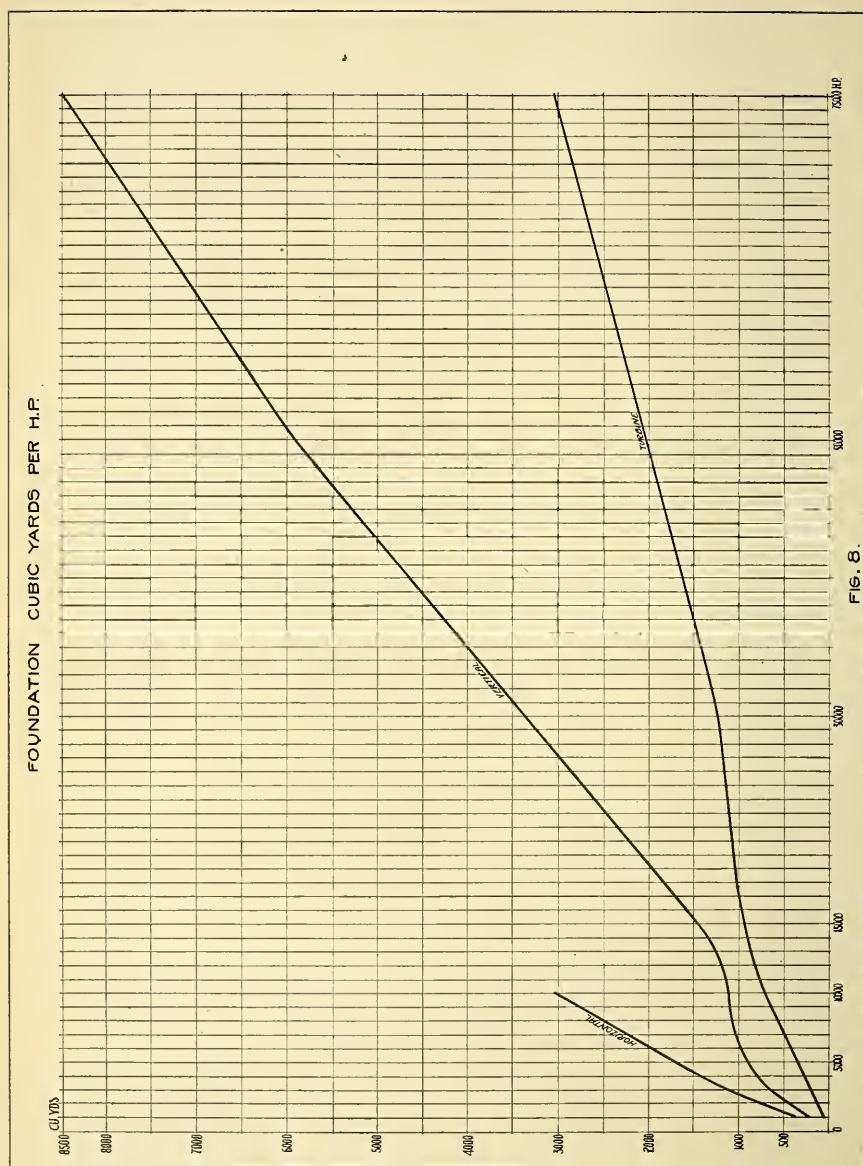


FIG. 8.

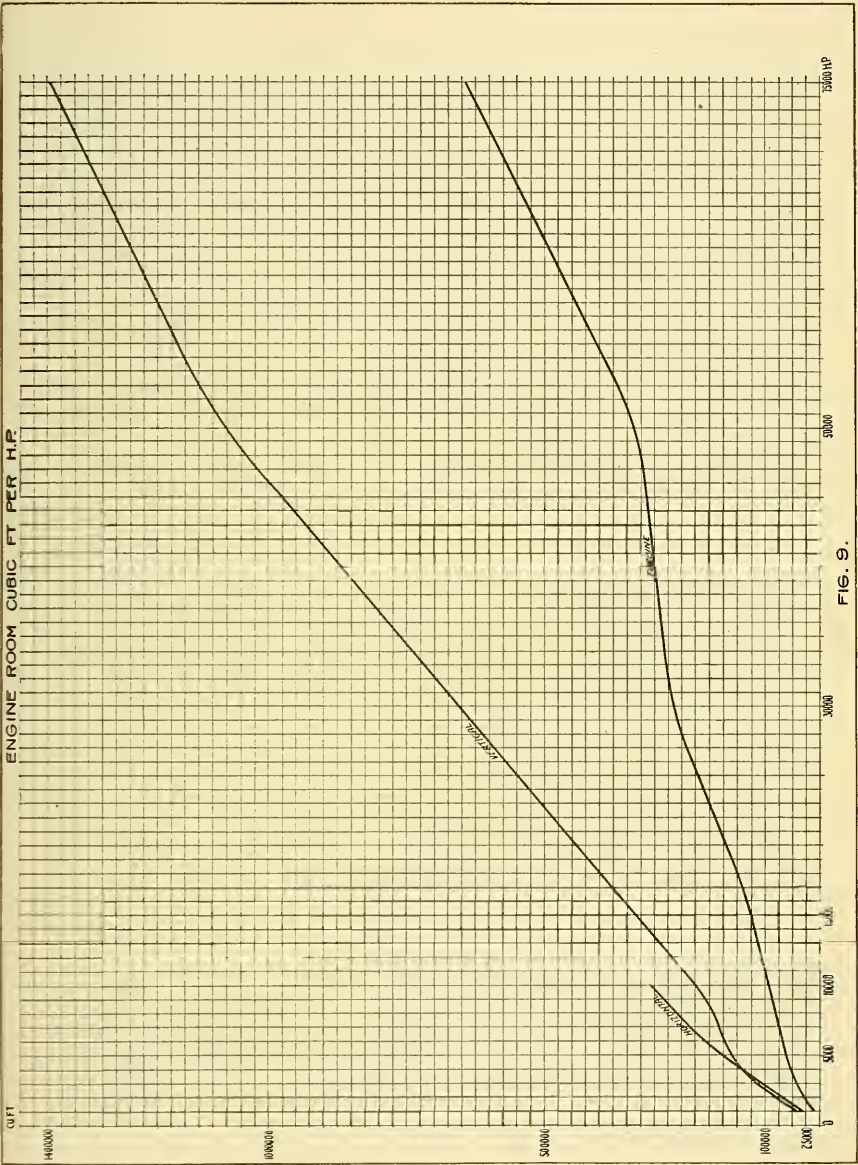


FIG. 9.

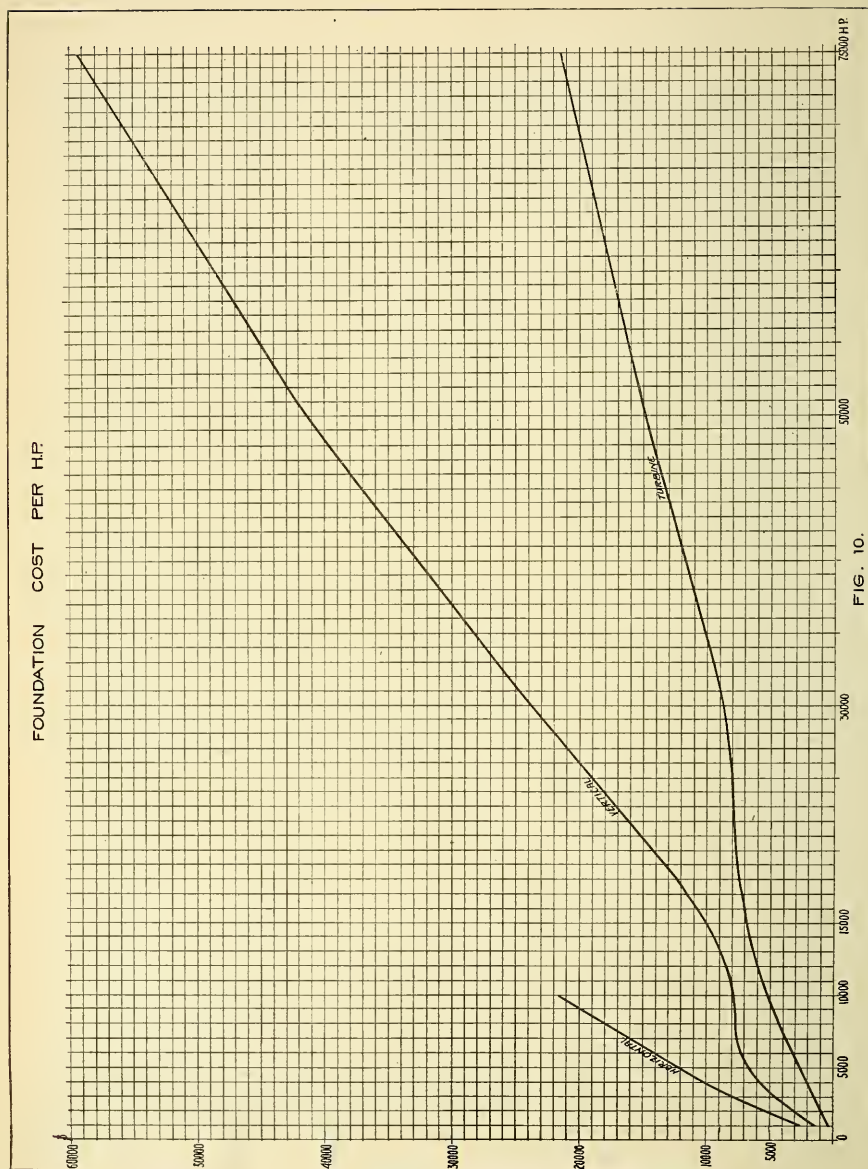




FIG. 11.

found possible, however, by rearranging auxiliary apparatus, to provide space for one 750 and one 400 K. W. turbo-generator outfit which will shortly be in operation.

Fig. 12 gives the comparative cost of land to accommodate the engine-room space, the land valuation being placed at \$5.00 per square foot. Whatever may be the value of land, the relative comparison would remain unaffected. Land value, however, is never of minor importance, for desirable power-house sites, with transportation and water facilities, usually cost a good deal. And allotting about half a square foot of floor space to the horse power of generating unit, it takes but little figuring, where plants are located on expensive ground, to show that the turbine in this respect alone may save a considerable part of its first cost.

The last diagram of the sequence, Fig. 13, summarizes the preceding curves, and shows, with foundations, building and land at the valuations given, how these factors of cost compare. The data will have served its purpose if it show that in a properly designed plant, employing the steam turbine, far more money may be saved in these particulars than is ever represented by the difference in cost between machinery of high grade and that of inferior quality.

A case or two may be to the point. A plant was recently laid out to contain three 1,000 K. W. units, with vertical cross-compound Corliss engines. Subsequently, three more 1,000 K. W. units were contracted for, steam turbines being ordered. It was found that the turbine saved 900 square feet of engine-room floor space, and about 38,000 cubic feet. Had the whole plant been originally designed for turbines, the saving of space would have been double these amounts, and the cost of land, building and foundations been reduced about \$50,000.00.

An electric railroad plant in Ohio was some time ago installed, in which there are two 500 K. W. generators direct-connected to cross-compound Corliss engines. Space was provided for two more units of the same size. For the increased power two 1,000 K. W. turbine outfits were purchased, which will go in the space left, and leave room for another turbine of 2,000 K. W. Thus, the engine-room space planned for 2,000 K. W. is found sufficient for 5,000 K. W. It is estimated that the boiler plant extension will be reduced about one-third because of improved efficiency. It figured, too, that a saving of \$2,900.00 was effected on each 1,000 K. W. foundation.

One other case, of perhaps greater interest, recently came to notice, that of a plant of 8,100 K. W. capacity, laid out on modern lines, employing vertical cross-compound condensing engines. There is no space for additional engine power, and any increase would require building extension and encroachment upon valuable land. It was shown that without going beyond the present building walls, and without dis-

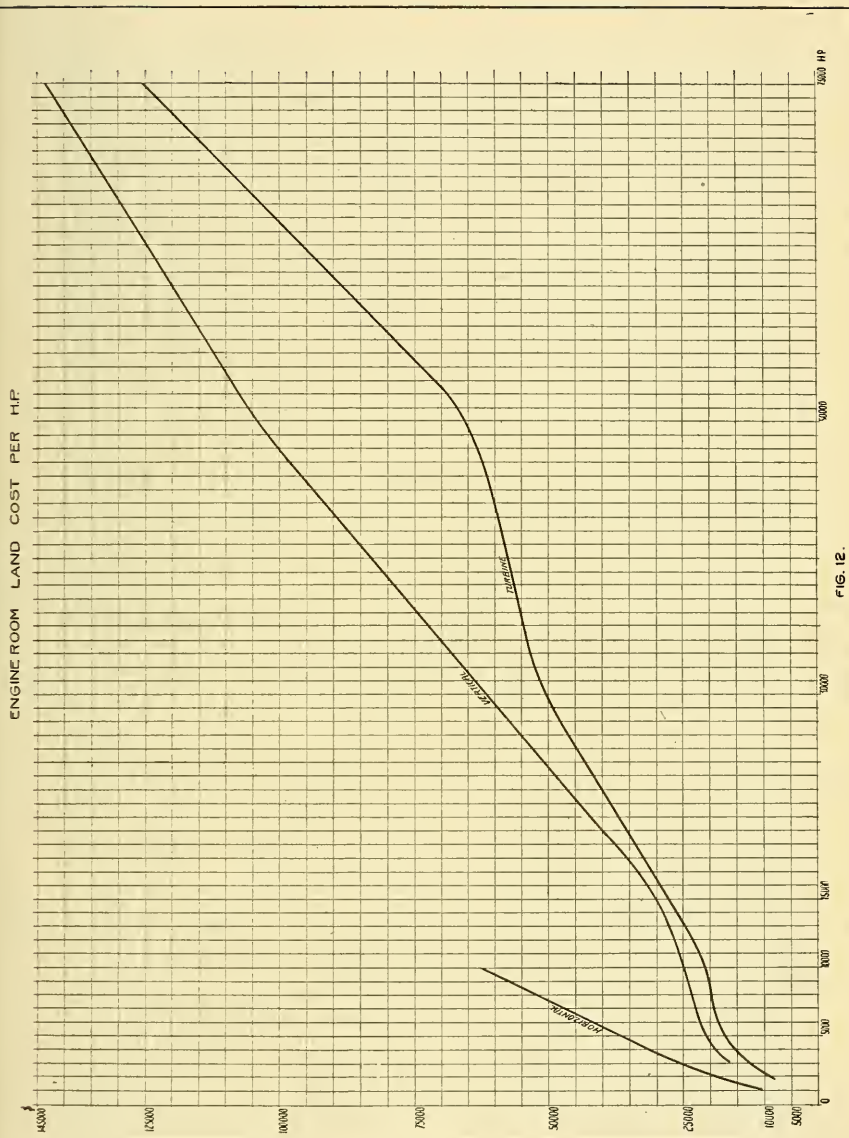


FIG. 12.

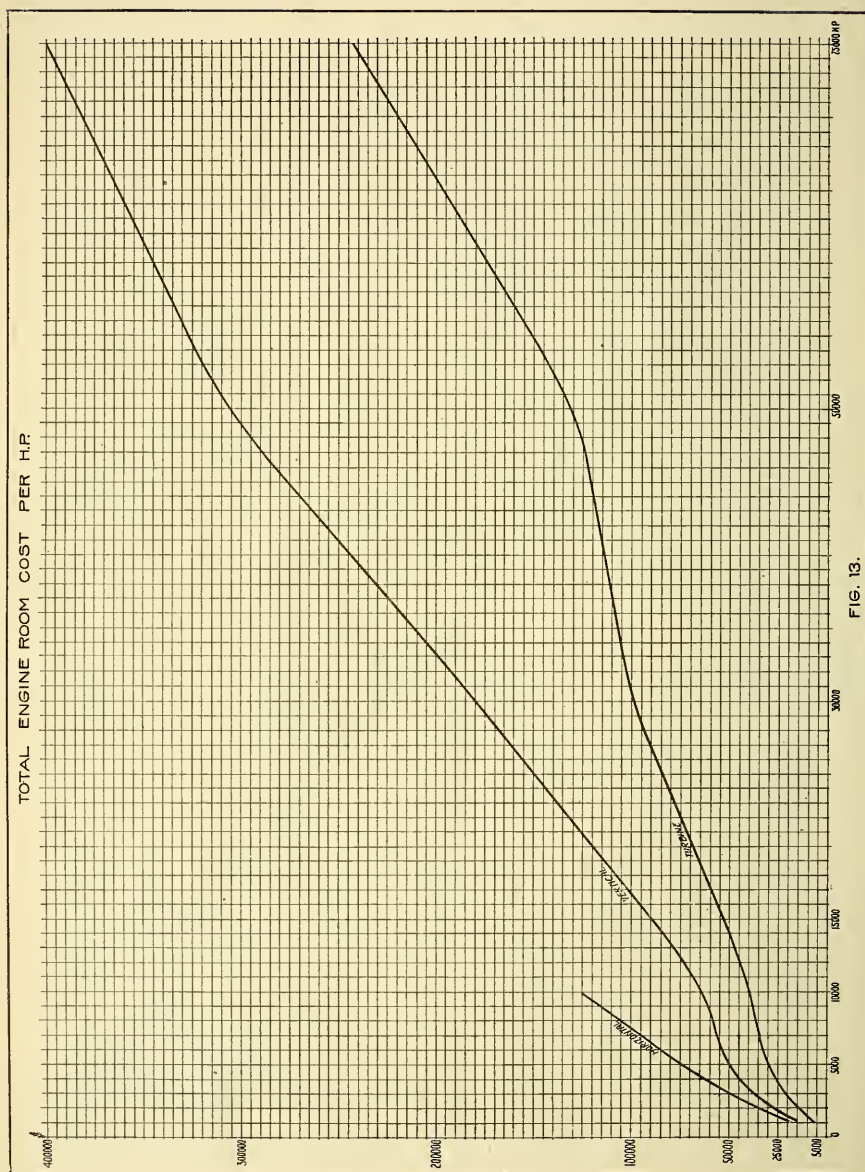


FIG. 13.

turbing the existing machinery, the plant might be doubled in capacity by installing turbines in the space available below the present engine-room level and adding another deck of boilers. And it has been figured that this arrangement would effect a reduction of over three dollars per kilowatt per annum in the present interest charge.

With some measure thus obtained of the comparative indirect expenses of installation, we may turn to consider the cost of the turbo-generator outfit itself. Is it high in price, or is its cost, if not an attractive feature, still within our common idea of value? The answer is that its price is reasonable; that, indeed, where the comparison is fair, the turbine will require the lesser first investment. It is, unhappily, quite as difficult to compare the costs of the turbine and piston engine as to compare the costs of engines themselves. A thing is, of course, high or low in price by comparison, but where the steam engine is concerned, to measure values were a hopeless task so long as there are held divergent views of design and construction and of engineering adaptation, with the builders themselves wide apart in their practice.

There are engines of good workmanship and of poor, of heavy proportions and light, and generous and scant proportioning of cylinder size and ratio, and of piston speed, to the work to be done. Perhaps, too, the voice of experience may protest that the buyer's insistence on his bargain is not always in keeping with the quality he would have, or should have, and it is not surprising that commercial necessity should sometimes affect engineering ideals. While the reliable builder will adhere to his high standards, there still will be found those whose more flexible practice will suffer impairment of quality to fit the price.

Proceeding with the comparison, however, it may be assumed that the larger field for the turbine begins about where the high-speed engine leaves off. Its steam economy at once identifies it with the most efficient engine practice, and it therefore applies more appropriately to the classes of service where medium and large size units are used. The comparison, then, lies generally between the turbine and the slow-speed engine. It remains merely to take an engine and generator of good construction, bring the engine efficiency as nearly as possible into parity with that of the turbine, also having it possess the same overload capacity, to find that the turbine is reasonable in price. And when we add the possible saving in foundations, buildings, etc., the first cost of installation is usually much in its favor.

There remain still one or two important features of electric power plant operation wherein the use of the reciprocating engine is attended with difficulty, and with respect to which the steam turbine offers unquestioned improvement.

One of these—the running-of direct-connected alternating current generators in parallel—has come to be a frequent requirement; but frequent as it is, and essential as it is, its accomplishment has been anything but an exact science. There has in fact been so little synchronism of method as to justify some wonder at the results that have really been obtained. There is no need here to particularize the complications of the problem. It obviously is not the work of the tyro to introduce into two or more units the identical conditions that will convert reciprocating motion into synchronous rotating motion, correlating as he must, the features of governing functions, inertia of reciprocating parts, fly-wheel weight and radius, and the like. And it becomes evident that where successful parallel running is achieved, it is the triumph of skill not only in design, but in the handling of the machinery itself.

These difficulties cease with the turbine. In it there is no fluctuation of angular velocity. There is but one direction of motion, with no element to detract from even turning movement, and due to its speed there is stored up more fly-wheel effect than is present in the piston engine.

It is, therefore, found that not only do steam turbines easily run together in parallel, as hydraulic turbines have always done, but it may be expected that they will operate with piston engines and the performance of the latter in this respect be much improved. In electric railroad work especially is this feature of the steam turbine of much interest, for it is well known how irregular loads accentuate the difficulties of regulation. Furthermore, the question of operating high frequency apparatus in combination electric railroad and lighting service may be more satisfactorily approached.

The feature next in importance, perhaps, is that of superheated steam. It is now quite generally recognized that superheating is of advantage, though there is still much about it to be learned. Future investigation, however, in which the turbine will take important part, will reveal more precisely its economical status, and it may be hoped that before long the net advantages derivable from different high steam temperatures will be known. Meanwhile, superheaters are being installed, and collaterally the problem of handling superheated steam has assumed importance. Engine builders themselves are feeling their way, for while some appear to unrestrictedly offer the Corliss valve for superheat work, others seem prone to confine it to the more conservative temperatures, and others still reject it altogether and hold to the poppet valve where superheat is employed.

The turbine may be used unreservedly with superheat of any feasible temperature. It has no internal rubbing surfaces, and there are no glands to become injured. Also, as no cylinder oil is required, there is no opportunity for lubricating trouble. Furthermore, there

seems to be with the turbine rather more proportionate benefit from superheat than with the piston engine, because of diminished skin friction.

Having said that the turbine requires no cylinder lubrication, the inference follows that the steam is therefore uncontaminated with oil, and that the exhaust, when condensed, is pure distilled water. This is true, and while it is of little consequence where water supply is abundant and good and cheap, it becomes, where conditions are otherwise, of exceeding importance. In many sections of the country, where the water contains either mud or scale making impurities, the cost of repairs to boilers, with the expense in labor and interruption of service entailed by constant cleaning, is a besetting evil, and to alleviate this trouble large surplus boiler plants are often installed. As a usual thing, too, difficulty is experienced in attempting to extract oil from exhaust steam.

To recur once more to this feature of lubrication in the turbine, it may be remarked that it is an item of very little expense. The bearings are the only points requiring oil, the lubricant being circulated around under pressure. The reservoir being once charged, very little is needed to maintain the supply.

Finally, in this commercial consideration of the turbine, one other question should perhaps not be omitted, one in fact which sometimes seems to outweigh almost every other—namely: How long does it take to get it? While the demand has in truth for some time exceeded the capacity for production (there being now under construction at East Pittsburg some 44,000 K. W. on order), so that the turbine has required about as much time to build as everything else, the extended facilities now nearing completion will better this considerably. Certainly, under normal conditions, these outfits, made of comparatively small parts, with no enormous pieces to be handled, ought to be quickly built, and what is quite evident, they can, when delivered in assembled condition, be so readily installed that the months sometimes required to erect large engines will be reduced to weeks.

If it is, then, seen that the steam turbine in all the essential aspects of its commercial utility appears to stand on solid ground, there cannot be yet attributed to it the virtue of universal application. It has its field chiefly in electric lighting and power work, though in small sizes it has been extensively used for driving blowers, pumps and other devices. Its speed, of course, prohibits belt drive.

But the direct-connected electrical generating unit has been the *sine qua non* of modern power development, and the reciprocating steam engine, under the stimulus of opportunity, has been brought nearly to its mechanical and thermal limit. With all the ingenuity and skill and patient effort that have marked its growth; with its

notable achievement, symbolizing, as it does, the march of industrial progress, it still remains, even in its most advanced form, a wasteful and complicated means for converting heat into energy. If we are to exact further tribute from the agency of steam; if we would hope to reduce complexity, and by a more simple, reliable and durable method of operation reduce the interest and maintenance charge; if, in a word, we would improve the standard of existing practice and surmount many of its limitations, we must then change the character of our medium, employ different principles, and give to the generation of power a new and greater significance. The steam turbine seems destined to mark the way.

Respectfully submitted,

EDWARD H. SNIFFIN.

President Vreeland—Will Mr. Beggs open the discussion on this paper?

Mr. John I. Beggs, Milwaukee—I have read the paper on steam turbines with a great deal of care, for the reason that two years ago I postponed all progress in the construction of a power house in which we expected to expend a large amount of money on units similar to those installed by the Manhattan Elevated Railway Company, in New York, and those now being built in our city for the Subway Company in New York, because the matter of steam turbines was then being seriously agitated; and I did not wish to proceed with the work at that time and have some one say a few years hence that it was a mistake to spend so much on a power house with reciprocating engines when it was about to be demonstrated that the steam turbine was destined to displace the reciprocating engine. Consequently, I have read this paper with a great deal of interest, and have gained from it some useful information.

There is one point which has not been touched upon as fully as many others and that is the relative cost of the generator to be connected to the steam turbine; in other words, you have left out apparently the differentiating cost as to the turbine and the generator to be connected to it. I would like to know whether your estimates of cost, when you say that the turbine costs less, means that the reduced cost is due to the reduced cost of the generator rather than to the turbines as compared with engines?

Mr. Sniffin—That question is not so material when you consider that these companies are either offering or expect to offer these turbine units as complete outfits. It makes no difference what the steam or electrical end costs individually, so long as we have the comparison of the cost of the complete unit. In a general way, it may be said that the electrical end of the unit is lower in cost of manufacture than the large revolving generator that goes with a reciprocating engine, while the steam end itself is perhaps comparatively expensive. The price of the complete unit, however, compared with the cost of the reciprocating unit, including its generator, is the comparison I made in my paper. It is not the purpose of the Westinghouse Company to furnish the steam turbine alone, but to furnish the generator with it as a complete unit.

Mr. Beggs—This is really a manufacturers' paper, and Mr. Sniffin has proceeded with the conclusions urged in that paper as a maximum cost upon lines which it will hardly be possible to follow by those who are going to pay for these units. There are two or three concerns in the United States at the present time which are developing the steam turbine in connection with generators, but I do not think that those of us who are spending millions of money in the construction of power plants, are going to be satisfied to depend upon two electrical manufacturing concerns for the construction of the steam turbine, which is a mechanical device and entirely independent of the electrical generator. For instance, some of the largest manufacturers of steam engines in the world are located in the city of Milwaukee, and I do not suppose that they propose to have their business taken from under them by the Westinghouse Company or General Electric Company. Therefore, it is important that we know what the differential cost is, and know how the varying estimates are reached in considering the expense of constructing a power plant, including that of the generator. One of the important points, which is entirely ignored in the paper before us, is the effect of the greatly reduced cost of the generator to be attached to the steam turbine, because of the high speed at which it must

necessarily run. I believe the lowest speed at which it is considered you can make a large turbine operate successfully is about seven hundred and fifty revolutions per minute. Is that correct?

Mr. Sniffin—Yes.

Mr. Beggs—Those gentlemen who know the difficulty we have had in getting the electrical manufacturers to build a generator of sufficiently low speed to operate satisfactorily with the larger types of Corliss engines that are now being built, know how much they have had to pay because of the slow speed. It becomes a very important question whether you buy the turbine and generator in two parts from two concerns, or buy from one concern which may absorb the saving in the generator, and turn it in as an excessive profit on the turbine; we must look at the commercial side of the subject, as well as the mechanical and electrical side of it.

Mr. N. H. Heft, Meriden—I ask Mr. Sniffin what history the steam turbine manufacturers have behind them, also what he proposes to give to the purchaser in the way of a guarantee as to the cost of maintenance?

Mr. Sniffin—In my paper I believe that I said something about the cost of maintenance that was found in a station in England, where something like a dozen turbines have been used. It is true the steam turbine has not behind it as many years of history as the reciprocating engine. It has, however, sufficient history behind it to show that there is no reason why a steam turbine, properly built, should not be less in maintenance cost than a reciprocating engine, which must be so by virtue of its very nature. I do not know what could be said about a guarantee of repairs; you could hardly get a guarantee of repairs on a reciprocating engine or any other piece of moving machinery. That feature is gauged not only by its excellence of design and construction, but by the way in which it is handled. I think I can best answer that question by saying that the Westinghouse Company is willing to make for the turbine the same guarantee which they will make for any other piece of machinery which they produce. They will as-

sume to be responsible for its sufficiency of design and construction, and they will agree to make good any defects in it within any reasonable time after its installation. What more can you ask?

Mr. Heft—It depends entirely on how the contract was drawn.

Mr. Sniffin—Nevertheless, that in substance is about all you can ask of any manufacturer in regard to his machinery. I might say further that there is no hesitation on the part of the manufacturer of the turbine in making guarantees of economy that are a great deal more valuable as guarantees than warranties of economy made on reciprocating engines. We all know that it is common to ask and obtain guarantees on reciprocating engines, but they are almost a dead letter. The value of the guarantee is practically never demonstrated as far as the engines are concerned; the engines are constructed, partly assembled in the shop, wheels never put on, and it is a physical impossibility to test large engines at the works. The engine is shipped and put into service, and it is only once in a blue moon that we find efforts made to test these engines, and when we do there are always many questions introduced affecting the actual results we get in such tests. Now, in the case of the steam turbine a guarantee is not only made, but it is demonstrated. If you purchase a 1,000 kilowatt turbine, you may obtain guarantees of efficiency, based upon different conditions involved—so many degrees of superheating, so many inches of vacuum, and so much steam pressure, and it is a fact that the turbine will be tested for efficiency under those conditions. At the particular works I know most about, there are facilities for making such tests—a large boiler plant, and superheating and condensing apparatus, and it will be found quite possible, and will be the regular practice, to put these turbines under service condition tests. I think, therefore, that the assurance had in that way is much greater than we have ever had on reciprocating engines, and I think it is a great step forward in the engine building practice.

Referring to the question of subdividing the cost of the steam turbine, I can only say that the turbo-generator unit itself is to be developed as a complete machine. You cannot have a good turbine and a good generator, and put them together and conclude they are going to make a good unit, unless they have been developed with relation to each other. As our friend has said, there are not many concerns in the turbine business at the present time. There will doubtless be more. There are a good many generator builders and doubtless many of them are expecting to find occasion to build generators for steam turbine use. Let them go ahead—the more the merrier; if any combination engine builder and generator builder can build a good steam end and a good electrical end, and put them together and make the outfit run, that is all we want.

Mr. Heft—I think Mr. Sniffin should be commended for his frankness, but I think it would have been a great satisfaction to the members if he had brought some data here based on history. The purchaser looks upon this question from the commercial side and not from the engineering side. I have been trying to get some data as to steam turbines for a year. I have gone to Hartford to see the plant that was erected there. I have been there three times and every time I have been there the plant was not running. It was shut down because they were changing something. They told me that there had been some little changes which were necessary. I asked the General Electric people to direct me where I could see a plant in operation. They replied that they had one at Schenectady that they were experimenting with, and that they were taking many orders for steam turbines. That won't go with me. I have got to know what you are going to do before I will buy one. I will be very glad to be furnished with any history or data bearing upon the question of steam turbines, with a view to purchasing large units. I do not care whether Milwaukee builds the engines and you build the generators, I will take it as a whole on condition that I have some guarantee as to the life and efficiency of this new engine.

Mr. Beggs—Mr. Sniffin's paper carries with it a contradiction to a part of his statement. One of the claims made for the steam turbine is the greater reliability in its regulation, its ability to accommodate itself to varying loads. I believe that general statement appears in your paper, Mr. Sniffin?

Mr. Sniffin—Yes.

Mr. Beggs—If it does not, it is at any rate the claim made for the steam turbine, and I take it this discussion is for the purpose of directing the steam turbine to the attention of those who may be interested in either increasing their steam plants or in starting new ones on certain lines of thought and information which they are able to receive. I have had exhaustive investigation made respecting steam turbines for two years past. We have held up the construction of a power plant in which there is to be expended three or four million dollars. I have had our chief engineer travel all through the East, visit the works of the Westinghouse Company for two or three days, and likewise the works of the General Electric Company, at Schenectady. There is a steam turbine running in Michigan, and it is said that the installation of a number of them in various places is contemplated. However, as to what the steam turbine will do in large units is as much a matter of conjecture on the part of the manufacturers as of those who are considering buying steam turbines. We know what a reciprocating engine will do, because they have been built and are in practical operation, and have been developed to their present perfection by the gradual process of many years' practice and experience. Therefore, if the steam turbine is going to simplify the matter of regulation, and make it possible to run generators in parallel with a greater degree of success and a reduction of the contingencies likely to arise which cause trouble, it seems a much simpler matter to build a generator to operate with that piece of apparatus, than it is to build a generator to operate with a reciprocating engine, the governing of which is such a delicate matter. Therefore, I take it that instead of there being one or two concerns in this

country which will build steam turbines there will be many of them.

I think the Association is indebted to Mr. Sniffin for what he has given us in his paper, notwithstanding the fact that the information is somewhat limited.

Mr. Heft—I want to say to the members that I am not opposed in any way to steam turbines, but, on the other hand, I am a believer in them; but I also believe that the manufacturers, when attempting to sell these turbines and have the purchaser exploit their machine, should do something themselves, and give us some data as to what the cost of maintenance and the life of these engines would be as compared to the reciprocating engine. If a man comes along to sell you a steam engine, he is offering you something with a record and a history; but you have no history behind the steam turbine. There are very few steam turbine plants in operation, and with those that are in operation, as far as I can learn, it has been necessary to make changes and the turbine has not come up to the expectation of the designers and builders. Yet I believe for the operating of generators they will eventually become a great commercial success. I believe a manufacturer coming before this body, should come here with some data, some history, regarding the turbine, so that we might know under what conditions we were buying the machines.

Mr. W. Worth Bean, St. Joseph, Mich.—I only want to speak about a minute, and I do not know that I will say anything about the turbine, because in the first place I do not know anything about it; and if I had the money to put in a steam turbine, I am not sure that I would buy it.

I am reminded by the discussion of some of the members of the American Street Railway Association, in Philadelphia, in 1887, when Mr. W. H. Wharton, Jr., was experimenting with an electric car before electricity was generally adopted. My friend, Mr. Hathaway, and a few old-timers, objected to buying motors and generators because we had no data, and they would not put their money in motors and generators because no one seemed to have had any experience with them,

and the gentleman by his remark is in the same position. Where did they have, and where did we have, any experience before we put our money in motors? How did we know they were going to work?

The turbine engine, like the electric motor and generator, is a new thing, and we should not be afraid to put our money in and develop it as we were obliged to develop the motors. Where would our Association be to-day if we had not developed the motors and generators? That is the way we developed the other industry, let us do that now with the turbine.

Mr. Heft—That is all very well if you have the money, but I have had quite large experience developing the large railway motor up to its present standard, and if I had not been in a position, in the way of a good contract with the electric companies binding them to exploit these machines at their own expense, I would have bankrupted the New Haven road. When I buy a machine to-day I want to know something about it. I want it as good as it can be made, and I want the fellow that made it to pay for the experiments.

Mr. C. D. Wyman, Boston—I cannot speak from a technical point of view as cleverly as Mr. Beggs, or my friend, Col. Heft, who have spoken upon this subject, but we have made on behalf of our various companies some investigation into this matter of steam turbines, both for large and small units. I desire to say that in our investigations, we have been treated with the utmost courtesy by the Westinghouse and the General Electric people. I think they have been good enough to give us the best information that they themselves possess. It has been acknowledged, I believe, by most of those experimenting in this field that the steam turbine is yet somewhat in the nature of an experiment. I think, therefore, perhaps it is rather premature for us to demand exact facts and exact data as to results of such machines. We should rather applaud the experimental work which they have taken up in this direction and feel grateful to them for having done as much as they have. While we may none of us be willing yet to make any very extensive investments in this new power, or rather

method of developing it, we ought to aid in every possible way the progress of these investigations. I am aware that the De La Vergne Company have already built some large steam turbines which have been recently shipped to the Delaware & Lackawanna road, and I am watching with interest the tests, or rather the experience, which the engineers of that company will have with them. I feel very certain that we are upon the eve of some important developments in the line of steam turbines. I simply want to say that for myself I feel very thankful for this paper, and I am willing to wait until these gentlemen are ready to give us a more complete exposition of the subject.

President Vreeland—It is the purpose of the Chair to give Mr. Sniffin an opportunity to reply briefly to anything that is suggested. It would be better if any of the members have anything to advance to say it now and let Mr. Sniffin's reply close the discussion. I will be very glad to hear from any one on this important subject, who has any new points to bring out.

Mr. G. W. Palmer, Jr., Fall River—I ask the gentleman whether or not the cost of the condensing plant for use of the turbines is greater or not than it is with engines?

Mr. B. J. Arnold, Chicago—I am not going to say anything on the subject, but I am a member of the Association, and I have a friend here who is not a member, and he desires to ask a question. I ask permission therefore that he may be allowed to ask the question. I refer to Mr. Katte of the New York Central road.

President Vreeland—We shall be glad to hear from him.

Mr. Katte—I simply wanted to ask Mr. Sniffin if a central condenser plant could be used in connection with a turbo-generator installation instead of an independent condenser for each unit. For instance, in small plants with units up to 750 kilowatt capacity, would it be desirable or necessary to provide an independent condenser for each unit installed?

Mr. C. O. Mailloux, New York—I think I can answer the question of the gentleman who just spoke from my own in-

formation. I am now about to install, in a central station for lighting and power, at Roslyn, Long Island, N. Y., two steam turbine units, which are intended to operate in connection with the same condensing outfit. It is expected that one or two additional turbine units will be added later to this plant should the two units already ordered prove satisfactory. I see no reason why it would not be possible to operate any number of units, with the same condensing plant, though it might be advantageous and, possibly, simpler, in the case of very large units, to have a single condenser outfit for each turbine unit.

The cost of the condensing apparatus, so far as my investigations have shown, appears to be somewhat larger than the cost of condensing apparatus for an ordinary steam engine of the same capacity. This is due to several reasons, mostly related to the desirability or necessity of giving the exhaust steam a flow which is as free and unimpeded as possible. This necessitates exhaust piping of larger diameter, and much greater care in its installation. The condensing apparatus itself also requires to be of slightly larger capacity. This disadvantage, however, is offset by many other advantages, most of which have doubtless been enumerated in Mr. Sniffin's paper. One of the advantages is the ability to use superheated steam of almost any temperature without detriment to the mechanical integrity of the engine. In fact, I had occasion, in designing large power plants, to consider seriously the question of using superheated steam, and I have found, much to my sorrow, that with most of the steam engines, as at present constructed, there is a limit to the temperature allowable in the steam entering the high pressure cylinder. This is owing to a two-fold difficulty, namely, the necessity for special valve designs and construction, and for special lubricants. When we reach a temperature of 500 degrees Fahrenheit, the steam is very near the point at which lubrication becomes practically impossible. In most engines, the valve design and construction would place the limit at a still lower temperature. With the steam turbine, on the contrary, there are no hot moving parts which require

lubrication, there are no valves and there is no limit to the temperature of superheating that is allowable. The only limit is, in fact, the melting point of the material of which the machine is made. I see no reason, so far as superheating is concerned, why, if there is any advantage in it, a steam turbine could not be run at a temperature where the steam spaces would be at a cherry heat, so that the machine would glow in the dark, and we know from the well recognized principles of thermodynamics that the higher the initial temperature, the higher will be the fuel economy resulting from superheating. I believe that the steam turbine, in that respect, is bound to be a factor of great importance in the evolution of improved methods of using steam for producing power by means of steam prime movers.

I do not hesitate to say that I am a strong believer in the steam turbine, having observed and studied it carefully for the last five or six years. I first saw it abroad, and was surprised to see the extent to which it was used, even though its use was principally confined to small units. I think that until two years ago no attempt had been made to design or operate turbine units of greater capacity than 200 kilowatts. Great progress has been made in the direction of larger sizes. Even already, the two units which I have ordered for the plant already mentioned of 400 kilowatt capacity each, are looked upon as of small size. As stated in Mr. Sniffin's paper, units of several times that capacity have already been made and put in operation. My own study of the subject leads me to believe that so far from there being a problem in the larger units, I believe that the increase in size tends to facilitate and simplify the design and construction; in other words, I believe that the larger turbine will be a much simpler machine, a more practical machine, as well as a cheaper and more economical machine. I have been presented, by the makers of steam turbines, with the brilliant prospect of looking forward to economies of something like 10.5 or 11 pounds of steam per indicated horse power hour. Phenomenal as this seems, yet it is even more astounding when we take into consideration the very small fric-

tion loss of the turbine, so that the steam consumption per kilowatt measured at the switchboard is relatively still lower, when compared with that of units driven by piston engines of the highest class.

Now, gentlemen, I think you will all concede that such brilliant promises are worthy of investigation, and that even should we find that we have to make a discount on them, we will still be doing very much better than can possibly be done with the very best reciprocating engines. The reciprocating engine itself has been brought to a high state of perfection, and it is not a machine to be despised by any means, but, at the same time, I believe that the turbine is the coming machine. I will not go so far as to say that I believe it has "arrived," but I will state that it is my belief that in a very few years, perhaps in a year or two, it will be possible for us to say conscientiously that it *has* arrived, and that it is going to stay. I have reached that conviction partly by discussing the matter with makers of reciprocating engines, some of whom have confessed to me that they are looking up the steam turbine with the greatest interest and closest attention. Many of them have admitted to me that they believe it to be the coming machine, and they have even told me with some satisfaction that they hoped to be able to go into the business. They assert their belief that there will be an opening for them to enter the field, owing to the fact that the fundamental patents have already expired or are about to expire. Hence, the engineers and the users of steam engines, and the companies who have to install power plants, need not fear that there will be lack of a competition sufficiently keen to keep prices down. Even to-day the total cost, notwithstanding the increased cost of the condenser, is, so far as my investigations are concerned, considerably lower than the cost of an equal equipment using reciprocating engines. This ought to be so, when we consider the relative simplicity of construction of the steam turbine, also the fact that it requires little or no foundations, and that it occupies much less space than the reciprocating engine.

As to the difficulties complained of in connection with steam

turbines, I may express the opinion that they are as much mechanical as they are electrical in character. The fact is that the steam turbine cannot yet be used for operating large direct connected generators of the direct current type. This is due to the impossibility of making a commutator that will withstand a high peripheral speed. Whenever the steam turbine has been used for driving generators of the direct current type, it has been found necessary to place the generator armatures on a countershaft geared to the turbine shaft so as to run them at a very much lower speed. This countershaft is objectionable, and, for this reason, the turbine is admitted by its best friends to-day to require and to involve the use of alternating current generators. These alternating current generators are far from having reached their ultimate perfection. It must be admitted that they still make considerable noise. This appears to be a defect more electrical than mechanical. It is probably largely, if not wholly, related to design of the dynamo, the shape of the pole pieces, the arrangement of armature conductors, the number and form of armature slots, etc. The problem is doubtless receiving attention, and I have confidence that in a year or two it will be fully eradicated. We all remember that the first direct current machines which were made, were very imperfect, and they had, in addition to several imperfections, the fault of also making a great deal of noise. That fault has been so far remedied that to-day we no longer complain on that score. I believe that the same process of evolution will give us the same satisfactory results in the case of the turbine-driven electric generators.

In point of speed regulation, the machine will compare at least favorably with any of the existing reciprocating steam engines. In point of economy, it has recommendations which, as already stated, give it peculiar attractiveness. In this connection it has two important qualities, in consequence of which it is destined, in my opinion, to outclass the piston engine. The first is its ability to withstand overloads, the second is its high efficiency with variable loads. In the latter respect, the steam turbine is really a wonderful machine, its efficiency being prac-

tically constant from half load to twenty-five per cent overload, and being if anything, slightly better when running with overload than when running with normal load or under-load.

President Vreeland—Gentlemen, I will ask Mr. Sniffin briefly to close this discussion on the points on which he desires to be heard further.

Mr. Sniffin—The last question seems to have been answered in regard to the character of the condensing apparatus. I would only add that we like to have the exhaust pipe large, and leading off in such a way as to get the steam away from the turbine readily, and so long as the pipe is tight and the vacuum maintained, I do not see that it makes any difference which method is employed. I think that the questions that have been asked and the answers made to them will leave in the minds of the members generally a feeling that the turbine is still something of an experiment. I think I can disprove that. Col. Heft remarked about his visit to Hartford on two or three occasions when he found the turbine shut down, due to some changes they were making. I treat of that in my paper and I very frankly gave the troubles we had at Hartford. That turbine now has been running since the early days of its installation for some time whenever they needed it. It satisfies the builders and I think it meets the expectations of owners. I think if Col. Heft were to interview the people who bought that turbine, and who paid for it and have operated it, he could probably get an assuring answer. I may say that that turbine was sold as a 1,500 kilowatt machine, and that it carries from 1,800 to 2,000 kilowatts right along, and it has, as a matter of fact, carried, without any apparent trouble, 2,800 kilowatts. I think you have all seen the results of tests made by Prof. Robb in this turbine carrying about 1,900 kilowatts, running with 150 pounds steam pressure, about twenty-seven inches of vacuum and some fifty degrees of superheat, and consuming 19.1 pounds of steam per kilowatt hour. That, I believe, would be admitted to be well within the line of the very best engine efficiency. There is a turbine at Stamford, Conn., of 400 kilowatts which has run since the first of February,

and which has run ten hours a day carrying its full load, generating current for factory power and lighting. The Westinghouse Air Brake Company has four 400 kilowatt machines that have been running for about three years. That plant is running to-day and it is doing all the work of the factory. Its economy is very high and its repairs are practically nothing. You can see practically no evidence of wear in these turbines.

Now, there is some history. History grows quickly, and my friend who has stated that we did not know whether a 5,000 kilowatt turbine will operate, should remember that up to three months ago we did not know that same thing about the piston engine. So far as I am aware, there was not a 5,000 kilowatt generator driven by piston engine in this country until those in New York in the Manhattan Elevated Railway Power House were started up. With the 1,500 kilowatt machine at Hartford; with the one at Stamford, with the four at the Westinghouse Company, with the work that has been done abroad, with the work that is now being done, I think that the turbines can hardly be called an experiment. One concern alone is to-day building 44,000 kilowatts of turbines on contracts. Among these are three that are for the Rapid Transit Subway in New York. They are 1,250 units, three of them, and they are to be used for lighting the subway. There are four 5,000 kilowatt turbines to be built for the Metropolitan District Road in London. They are to operate the entire system; three others of 3,500 kilowatts each are for the Metropolitan Railroad of London. The De Beers' Company, of Kimberly, South Africa, will shortly install two 1,000 kilowatt turbines, and they will both be shipped within the next thirty or sixty days. Prof. Thurston, acting as engineer for the DeBeers' Company, will conduct a series of tests of these machines before they go forward, and I believe the data obtained will be very valuable. We are rapidly adding to our information, and it will not be long before we shall know more about the steam turbine than we do about the piston engine. A large number of these turbines are being built; they are building for people

who have investigated them, witnessed their operation, visited the works, seen how they were put together, and in the most careful way formed their own conclusions on which to act. I think that answers the two questions.

Mr. Heft—I would like to suggest that at the meeting next year the other half of this large electric trust be invited to read a paper on turbine engines. I believe there is some difference in the construction of the two, there being, however, no difference in the price. It would certainly be interesting for the members here to see the ingenuity displayed in showing up to us the best turbine engine.

Mr. Beggs—I think Mr. Heft's suggestion is a matter that the incoming officers should consider. I would like to add to it that the manufacturers of reciprocating engines in this country likewise be given an opportunity to have their side of the case presented here, in order that we may have the views of the engineers of standing and reputation in this country, who do not think that the steam turbine is going to successfully compete with the reciprocating engine and supersede it.

President Vreeland—The suggestions of Col. Heft and Mr. Beggs are suggestions that necessarily must be made to the Executive Committee of the Association in considering topics for next year. The discussion so far as the turbine is concerned, is closed by Mr. Sniffin's remarks, and the Association is very much obliged for his kindness in preparing this paper.

Mr. Heft—I move you that a vote of thanks be tendered to Mr. Sniffin for the very able paper which he has presented to this Association.

Mr. Beggs—I second the motion. (Motion put and carried.)

President Vreeland—It is so ordered. Mr. Sniffin, you have heard the vote of thanks tendered to you for your courtesy.

Gentlemen, the next paper is upon the adjustment of damage claims, and the writer is not here. It is a paper rather in

the narrative form. You will have ample opportunity to look over it. Mr. Beggs finds it necessary to leave early to-day. I requested him some time ago to make a few brief remarks as an opening to this paper. It will not be necessary to have the paper read, as Mr. Beggs will discuss some of the points in his remarks on it. The paper has been prepared by Mr. Mason B. Starring, of the Chicago City Railway Company, Chicago, Ill.

THE ADJUSTMENT OF DAMAGE CLAIMS.

The American Street Railway Association—

Gentlemen: Not many years ago the caption of this paper was a subject which managers regarded in much the same light as that in which the modern horse first looked upon the automobile; it seemed sure enough an invention of the Evil One and dead certain to hurt something or somebody, but with the growth of the street railway and the community it supplies with means of transportation, that cancerous growth, yclept, damage claims, which had already fastened itself upon the steam roads, began to develop in the street railway body corporate, and as it grew so grew the study and care bestowed upon its treatment, and all careful managements have long since commenced to place experts in charge thereof. The successful adjustment of damage claims depends largely upon the personal equation; the personality and mental characteristics of claimant and adjuster are the prime factors in all settlements. No matter how fair a corporation may be, may its adjuster be never so able, yet if the claimant is so constituted as not to know fairness when he meets it, or so determined to bilk the company that no reasonable amount will appeal to his sense of right, then an adjustment must fail, and resort be had to law; then, too, the question of locality must be taken into consideration. Some cities are pest ridden with the itch for personal injury litigation; in Chicago, for instance, there seems to be from five to fifty "drummers" for personal injury suits to every personal injury, or person willing to claim one, to be drummed; and its taxpayers are even now being asked to add a large number of judges to the already large bench of the county in order to secure the trial of cases within a reasonable period of time after their commencement—what that city needs is not more judges, but an enforcement of the laws against champerty, barratry and maintenance; if I am rightly informed my own fair city is not by any means the only one suffering from such necessity.

To further the proper adjustment of claims of this class, a proper foundation must be laid at their very inception; preparation for a lawsuit must go hand in hand with preparation for adjustment; the knowledge the claimant has that the adjuster is fully cognizant of all the details, not only of the accident which gave rise to the claim in question, but also of the surgical side of the case, and the etiology of those special ailments which the claimant alleges to have resulted therefrom; goes a long way toward making an unreasonable claimant reasonable. In preparing for the adjustment of a claim of this nature, it is always wise to ascertain so much as is possible of the antecedent history of the claimant, for, since the growth of the personal injury claimant business into an industry, it is no unusual thing to find one person with a record of several antecedent injury claims, some of them settled amicably and others adjusted at the end of litigation. I have in mind at this writing the case of one woman who, starting in Philadelphia, had, as westward she took her way, accumulated injuries and suits until the one which she prosecuted against the company I have the honor to represent numbered seven upon her list, and it was her lucky number, too. It is very frequently found, especially in the claims of women, that prior to the occurrence of an accident there had existed certain obscure troubles which sooner or later must, by the progress of nature, force themselves upon the notice of their unfortunate possessor and his or her physician or physicians, but which had not aroused in the sufferer, up to the time of the happening of a street railway accident, sufficient attention to cause medical attendance to be secured; but when an accident happens which presages the recovery of damages, every ache and pain is then watched with interest, one might also say with desire, and each and every grunt, whether caused by an actual twinge or by auto-suggestion, is attributed to the "awful" accident, and to the wicked conductor who started the car at the supreme moment when an old lady had one foot firmly planted upon the car step and the other deftly poised in the air. Some physicians find it to their interest to humor their patients and having a natural distaste for antagonizing their patients by telling them that the complaints made by the patient and the conditions found by the physician have no reference whatever to the probable consequences of such an accident as that under consideration, leave them firm in the belief that all their troubles are due solely to the violence applied at the time of the alleged accident. This is especially true of pelvic and nervous disturbances of the fair sex; many a woman directs her doctor's attention for the first time to pelvic troubles subsequent to an accident, when her comfort and possibly her health for a life-time might have been subserved by consulting him promptly relative thereto when the first manifestations

of disturbance made their appearance. Occasionally instances are met with where the courage to undergo voluntary torture for the sake of the few dollars that can be secured out of a claim, attains so abnormal a development as to amount practically to insanity. Of these strange phenomena an extreme example which came under my personal observation is so abnormal as to almost pass beyond belief by any person not confronted with proof. Shortly stated it was as follows: A woman physician, related to a fine family and of independent means, brought suit for damages. The only injury that she was able to show she sustained at the time the accident occurred was a slight sprain of one ankle. She was exceedingly heavy and in the course of the trial it developed she had had both breasts, weighing some twenty-eight pounds, excised and upon being asked the relation this operation had to the accident to her ankle or why she had it performed, she replied that it was done in order to lessen the burden of weight which her "poor sore ankle" was compelled to sustain. It afterward appeared that at some time antedating the accident she had undergone an operation known as oophorectomy for the purpose of bringing on an artificial menopause, in order that the conditions which nature had imposed upon her sex should not interfere with her attendance upon her duties as a physician. Subsequently to the trial and disposal of this case, it was said, that having learned of an operation performed in France for the removal of flesh from the thighs she hied herself to Paris to try this operation.

Science has come mightily to the aid of the adjuster in throwing the tell-tale searchlight of the X-ray machine upon the human anatomy. This marvelous discovery is effecting great and good results in all personal injury departments of those corporations which have had the good fortune to come in contact with, and secure the service of, an expert in its use; many and many are the cases of fraud and imposition which it has exposed, and a great, great many (how many I never have gone into the details to carefully ascertain) of the claims that bones have been broken or fractured in steam or street railway accidents have thereby been shown to be mere frauds, and that no fracture or fractures existed. Previous to the invention of the X-ray instrument it was much more difficult for the adjuster to ascertain the truth in regard to this point. A limb placed in a plaster cast is thereby put beyond the close inspection of a physician, and it is manifestly impossible to compel the removal of the cast for the direct inspection of the wound; this afforded an easy and successful mask for deceit. Now, however, the X-ray reveals, almost at a glance, the real condition of the hidden bone. Could an instrument be invented which would as indisputably and as accurately determine the extent of injuries to

nerves and muscles as this machine does to bones, the task of adjusting personal injuries would be greatly lightened and the uncertainty which prevents an always accurate decision would be very largely removed.

Not all the experiences met in the adjustment of personal injury claims are of the depressing order; some either in or out of court are relieved with touches of humor which serve to lighten the dreary routine of fighting frauds and imposters. For example: A homeopathic physician, of the female persuasion, brought suit against a surface road, claiming that a fall received from one of its cars had caused her to suffer so severe a brain and nerve injury that her ability to discharge her professional duties had been seriously impaired. In the course of cross-examination she was asked if she had not fallen down a full flight of stairs in a certain department store. Without hesitation she replied:

"I did, sir, but this fall partially restored me to health. I have had no headaches since." With great *suaviter in modo* she said to her tormentor: "If you were familiar with the great principle upon which my school of medicine rests, you would easily understand why this was a natural result."

Knowing the familiar motto of the homeopathic school, "*similia similibus curantur*," the company's attorney remarked:

"I believe your motto is——"

And before he could finish his sentence she interrupted him, "*Simile similibus, similiter*." Bench and bar had hardly smothered their laughter when in reply to a question concerning the whereabouts of a certain patient of hers, she said: "He has passed beyond my jurisprudence." Certainly the originator of Mrs. Malaprop need not have searched beyond this good lady for a prototype. It may interest you to know that the verdict indicated that the jury thought that the practice of this physician had not been seriously damaged by the great and severe injuries she claimed to have sustained.

In making investigations leading up to physical disabilities, antecedent accidents, with a view to ascertaining whether or no ailments complained of are a result of traumatism and are properly attributable to that cause or are due to other and pre-existing causes, much delicacy should be displayed so as not to unnecessarily annoy either the claimant or his or her friends or family—and in the trial of damage suits, however solid an array of testimony it may be possible to present reflecting upon the character of a man or a woman, a party to a contention of this kind, it must always be borne in mind that the natural chivalry of our race is prone to resent what may seem to the auditors of such testimony an unnecessary, or to some, mayhap, a malicious attack upon some person for or because of the presentation by that person of a

damage claim. The arousing of such prejudices should be avoided, as, in most cases should the introduction of evidence as to intoxication, because, while it is true most of American mankind take a drink occasionally, few like to be charged with taking so much as to cause the enemy in the stomach to take away the wisdom in the head.

I think we will all arrive at the deduction that there is no department in the entire management of street or steam railway properties into which the personal equation more strongly enters, and that personality of the right stamp in the head of that department charged with the adjustment of claims, whatever his title may be—even when dubbed “Claim Agent,” that title now so thoroughly despised more by reason of its adoption by that vast body of ghouls sometime called “ambulance chasers” which preys alike upon the injured and the railways, than for any other cause—is the most essential requisite to the proper handling of this unfortunate part of our street railway machinery. My first precept, therefore, is “seek the man.” Get a combination of absolute honesty and industry, with a moderate supply of brains, and you have a good man; let any one of this trinity be absent and the settlements he makes will be mostly unsatisfactory, if he succeeds in making any at all. If the claimant possesses these same sterling attributes, the result will be an adjustment satisfactory to both parties, for in that event there must of necessity be merit to both sides of the case or no claim would be made, and no adjustment sought. If all claims were just, and all claimants fair, the matter of adjustment would be simple, but as a rule comparatively few claims are just, and fewer yet of the claimants are fair, so that the faculties and perceptions of whoever represents the company’s interests must be ever alert not to be duped by dissimulation, exaggeration and guile, and to discover actual and intentional fraud whenever and wherever it exists. Some claimants possess honesty, but not enough to leaven the lump, many possess industry to some degree, and all possess a certain species of brain; most of them possess what might be justly termed a low order of cunning; the doctrine of our homeopathic friend, that like cures like, must not be applied to an adjustment.

Precept number two is “get facts.” Facts are what win! He who can uncontrovertibly and openly place facts before a malingerer puts him at a disadvantage from which he can never recover. Facts, too, are the enemies of some physicians. Look out for the doctor who puts the plaster cast upon the unbroken limb. He is a stumbling-block in the path, but employ to meet him not one who has a beam to pluck from his own eye. Rarely should the attending physician, if honorable and a fair practitioner, be ousted from the care of his patient. Be the recovery of the patient never so good, if the company furnishes the surgeon who attends the injured person, by some perversion of

mental vision it is claimed alike by patient, relatives and friends that he is and has been sent to the bedside of the patient to injure him in some occult way, and by so doing, affect detriment to his interests and protection to those of the street railway company, sight being lost of the fact that the complete and early convalescence and recovery of health of the patient is best for all.

A little book, lying on my desk as I write, says very appropriately of this theme: "Pettifoggers in law and empirics in medicine, whether their patients lose or save their property or their lives, take care to be, in either case, equally remunerated; they seize both horns of the dilemma and press defeat, no less than success, into their service. They hold from time immemorial the fee simple of a vast estate, subject to no alienation, diminution, revolution or tax; the folly and ignorance of mankind. Over this extensive domain they have long had, by undisputed usage, the sole management and control, inasmuch as the real owners must strenuously and sturdily disclaim all right, title and proprietorship therein."

Meet fairness with fairness; fraud with firmness. "Fighting fire with fire," avoid as you would His Satanic Majesty himself. Fire cannot be handled without burns, and burns are at least painful. Avoid a reputation for settling everything; it hurts stockholders' pockets; equally avoid a reputation for fighting, but when you do fight, win; settle all the grave cases that presage loss; litigate all those that possess little or no merit. It is a juster as well as a wiser policy—for once, at least, Justice and Expediency run hand in hand.

Very often I am asked to furnish copies of the form of release which is used in concluding an adjustment, and willingly comply; but one form of release is about as much like another as peas in the same pod, and in the event that a settlement is contested in court by an ignorant person, and especially by one having no knowledge of the English language, the more technical in its terms and the more involved in its legal phraseology a release is, the more apt a jury is to say that the person who signed it was totally ignorant of its contents and that the execution of the document was obtained by fraud.

Some time ago the writer had occasion to cause a release to be obtained from a German girl who had stepped from a moving car as it was coming to a stop for her to alight, while the car still had sufficient motion to disturb her equilibrium. The girl lost her leg, and an adjustment was made very shortly after the accident, while she was still in the hospital, and was not made because of any liability, but merely to avoid litigation. After she got out and around, she was very easily persuaded by somebody—we can all suspect whom—that she had been imposed upon, and the foolish woman went upon the witness-stand and testified, under her solemn oath, not only to a state

of facts which created a liability on the part of the defendant company, but also that she did not know the contents of the paper she had signed; that she could not read English and that even if the paper had been translated to her in German (which, by the way, it was, although she denied the fact), she would have been unable to comprehend it and understand what it meant; but unfortunately for her, and her attorneys, who had a large fee contingent upon the result of her story, she had written in the German language in her own handwriting, over her own signature, on a portion of the hospital record which hung by her bedside, "I got one hundred dollars from the railroad company, and I know I can get no more for my leg." Certainly not a very artificially drawn legal document, but without it there is no doubt but what the very perfect release which was properly and understandingly executed by her would have been set aside. It is, therefore, fair to draw the conclusion that in settling with ignorant people, it is wise to have them express in their own way their understanding of the purport and effect of documents which they sign; and I have always cautioned adjusters to be particularly careful in this respect—never to make any misrepresentations, never to allow a person who has been drinking to sign a release, and wherever it seems wise to the adjuster, owing to the circumstances surrounding the settlement, to obtain from the claimant in claimant's own handwriting such a statement as that referred to above; and, in the event that claimant signs by mark, to obtain disinterested and reliable witnesses to the mark. Perhaps this little suggestion may seem to many discursive and entirely unnecessary, but to others it may exemplify, as it did to me, the need of the utmost care and precaution in concluding matters of this kind, for, generally speaking, the public maintains a double standard of morals—one for dealings with corporations, another for transactions with individuals. The man who holds himself bound to govern his relations with a corporation by the same rule of morals and ethics which regulates his relation with the natural instead of the artificial citizen, is fast becoming as extinct as the Dodo. Almost the universal attitude is that a corporation is not entitled to receive that strict application of the law of good morals and common honesty which is shown to individuals acting in private capacities. Put into common parlance, the public code in dealing with a corporation seems to be that "A man is entitled to all he can get out of a corporation."

The atmosphere of such a feeling is typical of a very large share of the cases which come for adjustment before the metropolitan law or claim department. There is no escaping from the conclusion, enforced by careful observation, that men who could not be induced to deal dishonorably with private individuals, acting as such, do not scruple to make false representations as to the nature and value of any

old claim against a corporation. This practice is so common that it may be classed as almost universal. And the men, or a decided majority of them, who justify and indulge in this kind of "sharp practice" in dealing with a railroad corporation, might safely be trusted with a private loan, unsecured, and amounting to more than the sum involved in their suits for damages.

Previous to a very few years ago, the steam and street railroad companies of every kind and the "common carriers" of various descriptions have been the main sufferers from this deplorable attitude of the public conscience which decrees one moral standard for dealings with the private individual and another and a much lower one for transactions with a corporation. Now the application of this double standard is being made to many other kinds of corporations. The municipality is the worst sufferer of all; but the manufacturer, even the smaller and the private industrial concern, is being brought under the application of this sentiment and practice.

Possibly, of all the varied classes of claims, with which the adjuster of damage claims meets, the most dreaded and difficult for him to handle are those which bring to bear the subtle influence of "pull." Not infrequently a conscientious adjuster finds that this influence has reached "above his head," and that the discharge of his duty brings him into opposition with others more easily influenced and of higher rank on the company's roster. Quite generally claims pressed with this kind of backing are either fraudulent or extortionate. Of course, there are exceptions to this rule; but the very fact that the claimant feels called upon to exert a personal, or social, or political pressure, or add to his claim the weight of some powerful financial interest in the institution in question, is a strong presumption that the claim for which this influence is solicited is too weak to stand upon its own merits. In this connection it might be stated that corporate officers, and particularly those engaged in passenger transportation, are not unmindful of the public attitude of sensitiveness and quasi-hostility towards them, and are, therefore, willing to make a just and liberal settlement without any undue influence exerted upon them, and for that reason adjust rather than contest even doubtfully meritorious claims. But, to go back a little ways, let us always consider an adjuster's trials and tribulations and not make his pathway too hard, for if he learns that claims which he declines are subsequently increased by reason of the so-called "pull" he soon gets to thinking that if somebody is to be a "good fellow," why should not he be that somebody? And if his superior officers are so willing to give away the company's money to please their friends, or to make friends for other departments of the company's service, why is it not perfectly proper for him to do those self-same things? Thus the company soon finds itself with a

vastly increasing damage account. It is a good rule for any company to adopt to reverse rarely, if ever, a decision of its adjuster. If upon consultation with an adjuster it would seem that on the merits of the case in question, some action different from that already taken by him should be had, let the adjuster attend to that in his own way; do not have him feel disgruntled and overridden. There is no excuse for inflicting personal humiliation upon a man who possesses your confidence, who has your money in his pocket and your best interests at heart. Many and many a good man has been spoiled, I fear, by the unfortunate proclivity on the part of his managers to yield to the so-called "pull." If a company has any friends to make, or debts to pay, let them be paid through some other department and in some other manner. Debts paid in this manner are never considered liquidated, and a person who has obtained something for nothing for some one, by reason of his influence, nevertheless, thereafter boasts of the amount he has saved the company and the obligation under which it has been placed to him by his getting this or that case settled for them. This brings to my mind the subject of "go-betweens." There is in every community a class of people which seeks its livelihood by preying upon both sides of personal injury claims. It seeks the individual and impresses upon him how much can be obtained through the go-between, and how little without such influence, embellishing the yarn with wonderful stories concerning that influence, often to the detriment of honest officers, trying to make the claimant believe he has some hold upon them and that they are corrupt, and trying to persuade the claimant to see that the sun of success rises and sets in the great and only negotiator, and his Svengali-like "inflooeence." And should this creature be treated with any consideration he swells himself larger and larger, and as he himself swells, so swells he the head of the claimant, and at last, if he succeeds in bringing the opposing parties together, his grandiloquent attitude dwindles to the proposition tritely expressed in the words, "How much is there in it for me?" while he assumes all the time the attitude that without his invaluable services, claimant and claimee, if I may coin the word, never could have come together or have reasonably disposed of their differences. There is one claim department of which I know, into which such an individual is not allowed to enter. Some things, in the human race, are more despicable than this creature, but he is sufficiently low in the scale to make it unwise, unsafe and, to every fair-minded person, disgusting, to have any dealings with him. Perhaps it is not fair to our sex to use the pronoun *he* so often in this connection—many and many such a creature masquerades in petticoats. Much success depends upon the care and discrimination shown in selecting cases for trial, and while this paper should mayhap deal only with the "Adjustment of Damage

Claims," a word or two upon the corollary thereof, the litigation of damage claims, may not fall amiss. To illustrate, given a company, which employs and enjoys the reputation of employing only the ablest counsel obtainable and prosecuting its every defense vigorously and uprightly, and which wins a great majority of the cases which it tries, ninety per cent of the bar will seek settlements in terms not unfavorable to that company rather than meet it in court. Right here let me say another word about trials and their results. Never compromise the verdicts when results are unfavorable. If they ripen into judgments, make the best you can of them after they have been affirmed by a court of last resort, not before. The fact soon becomes known as to who will and who will not compromise for fifty, or some other, per cent of the amount of a verdict, after one is rendered, and that company or person having such contingencies to contemplate, and compromising upon verdicts in the manner heretofore suggested, will soon be confronted with the necessity of trying each and every case brought against it. The results are so much more satisfactory to the practitioner who gets fifty per cent of the amount recovered by suit and only thirty-three and one-third per cent or less, in the event of settlement. Then, too, think of the disappointment this same gentlemen feels when he cannot add mention of such compromises to his scrapbook of newspaper clippings reciting his recovery of a ten thousand dollar verdict against this company and a twenty-five thousand-dollar verdict against that one, which volume he so proudly displays when luring to employ him some unsophisticated, but possibly injured, person whose clientage he seeks, but who never saw or heard of him before his call. The sadness is appalling; weep with me, my hearers! Never, as the expression goes, settle "behind the back" of a reputable lawyer. If in rare instances circumstances compel such action, see that he receives a reasonable fee. On the other hand, never settle with the "ambulance chaser"; it is far better to pay the client of such an one a hundred dollars than to pay him ten. Try it and see.

In writing concerning the adjustment of damage claims, I have confined myself to those arising from injuries to persons and omitted referring to those relating to damage to personal property, realty, etc. I have also intentionally refrained from going into the details of the different means of procedure advisable to be followed from the moment an accident happens down to the time at which any claim, or claims, arising therefrom are finally laid at rest. Every company, I take it, whose claims are sufficiently numerous and whose damages are sufficiently large to invite any special attention thereto has adopted careful, and one may say almost scientific, methods of caring for the injured person or persons, preventing fraud and starting immediately upon the happening of any occurrence which might give rise to a

claim—the rolling of that ball of investigation which as it moves along grows and grows until it assumes and becomes a perfect and symmetrical globe of defense.

The temptation to overstep the bounds of time and space allotted for this disquisition is so strong that it now becomes me to say, with the old dominie, lest like him I might fail to hold the interest of my auditors, "I can make this paper longer, but I won't." To which comes surging back on the tide of courteously restrained impatience, a reply requiring no straining of the ear to hear, "We don't want it any longer; its present length suits us very well."

Respectfully submitted,

MASON B. STARRING.

Mr. John I. Beggs, Milwaukee—Mr. Chairman, I feel constrained to say something upon this paper as a mark of respect to yourself, as presiding officer, and in compliance with your letter, asking me to open the discussion upon Mr. Starring's paper. But you have assigned to me something that I find it difficult to enter into with any degree of enthusiasm, or rather with interest, for the reason there is nothing in the paper to combat. If I could take issue with some of the points embodied in this admirable paper, I could talk upon it very much better, as I could with Mr. Sniffin or some of the other gentlemen who presented papers here; but there is not a single line in Mr. Starring's paper with which I can take issue. It is an admirably prepared paper. It outlines in a very general way the practice we pursue in our own company. Mr. Starring has brought out the fact that the personal element enters into the adjustment of injuries and damage claims to so great an extent that it is almost impossible to realize the difficulties that there can be in the case of adjusting claims for damages between various companies where that personality is wanting.

There are one or two points in Mr. Starring's paper that I particularly desire to lay stress upon and that is the maintenance of an absolutely rigid policy as to dealing with all classes of claims, regardless of who may be affected or what influence may be brought to bear to compel or induce the company to make more liberal settlements. It is not an unusual thing to have influential directors of the company, influential politicians, and sometimes directors influenced by politicians, attempting

to prevail upon the management to allow something in a case of some injury for which there is no legal liability. I may say as far as that is concerned, if the entire board of directors, if all of the officers and all the politicians of the city in which I am located were to enter into a petition to make some adjustment more favorable than the conditions would warrant, I would not permit it to be done. When that policy is known throughout the city, and consistently adhered to, it has much to do with deterring pettifogging lawyers from instituting suits against the company. I might say that in the history of the company I represent, my orders are that in every case where there is a fair belief that the company is liable, to make a settlement if it can be done on any fair basis and to make it as quickly as possible. As an indication of that, I may state that during the year 1890 we had eleven cases tried in court, in which we obtained a verdict in nine of them. One of the two that went against us was afterwards reversed by the court of highest jurisdiction in the State. Last year we won nine out of ten cases, which was all we had to go to the courts. One of the great difficulties to contend with in dealing with accident cases, is to know exactly what the facts are. This is sometimes rendered more difficult because of the inclination of employes who may be responsible to shield themselves even under a sworn statement. I might say that the practice of our company is to require a sworn statement from both the motorman and conductor in every case. We prepare every case, as though it were to go to court, and obtain as many sworn statements as possible, from as many witnesses as possible. My policy, in the treatment of unfair accident claims, is that if we could settle a claim for ten dollars which would require one hundred dollars to defend it, would far rather spend one hundred dollars and defeat the claim. Last year our accident cost was reduced to a fraction over two per cent of our gross receipts. We carry four per cent of our gross receipts every month to injury and damages reserve. Year before last it was about two and nine-tenths, I think. Last year we reduced it to two and one-eighth per cent. This year it is less than that,

and the reduction is largely due to this persistent policy of the application of fair common sense to the settlement of every case, and permitting no case to be settled simply to get rid of it, if you do not feel that you are justly liable. Therefore, I say, gentlemen, do not permit the influence of directors nor of politicians to affect the settlement of any injury or damage case. Cross-examine your own investigators and employes to find out the real facts in connection with it. We are very often confronted with evidence for the plaintiff and are dumfounded to find that we did not know what was going on in our own cars.

As I said before, we have only lost on an average one case out of ten in the last two years. That we consider phenomenal, considering the juries before whom these cases are tried, who have the prejudice that attaches to every corporation, particularly a public utility. I am sorry, Mr. President, that I am not able to say more upon this paper for the interest of the Association.

President Vreeland—Gentlemen, before asking for discussion on this paper, I would say that the Chair is very desirous of closing up the business of the day with a little extension of the morning session. Contrary to the usual custom, in the various cities in which the Association has met, the Committee on Entertainment insists on the President of the Association acting as the toastmaster at the annual banquet. As I have that privilege to discharge to-night, I think by a little extension of the morning session, we will be able to close up the business, and it will be an advantage to all of us. The Committee on Nominations has retired and will be ready to report before we adjourn. I ask the indulgence of the members to this extent, that we give the necessary time to closing, even if it takes us a little beyond the usual lunch hour.

The paper on the adjustment of damage claims, which was suggested by a number of members of the Association to the Executive Committee, is an important topic. It is before you for discussion. Mr. Beggs very kindly consented at a late hour to open this discussion and to get it before the Association.

We will be very glad to hear from any members briefly on points connected with it. The subject is before you, gentlemen.

Mr. H. M. Sloan, Chicago—I ask Mr. Beggs whether or not he makes all his investigators notaries, so as to obtain the sworn statements from the witnesses. We find it very difficult in many cases to get the statement even signed. Witnesses object to it.

Mr. Beggs—All of our investigators, in fact everybody connected with our claim department, is a notary.

Mr. W. Worth Bean, St. Joseph, Mich.—I ask Mr. Beggs whether, in a majority of cases, the juries are from the city or from the country?

Mr. Beggs—A majority are city jurors.

Mr. H. A. Robinson, New York—Mr. President, I think Mr. Beggs is to be highly congratulated on the very successful result which he has attained in the City of Milwaukee. I have no doubt it is due to the fearless and courageous stand that he has taken in treating accident claims. I hope his good work will continue. During the past year the corporation I have control of in New York tried 1,145 cases. Out of that number we were successful in about 650 of them. With this great amount of litigation, of course it is very difficult to handle it in the manner that Mr. Beggs has suggested. I insist, generally, on the taking of affidavits of the motorman and conductor, but as far as obtaining statements in writing and having them signed or made under oath, it is very difficult to obtain statements from a large number of witnesses, particularly those who are, as a rule, of the lower class. It is very difficult in handling a large number of cases to get statements in all cases. Some days we have a large number of reports come in and it is very difficult for the claim agent to say from reading the report whether the injury is severe or whether there may not be some elements which make it a case of liability on the part of the company. The number of cases of injury some days runs as high as 110 or 115, so you will see it is impracticable at times to adopt all the methods sug-

gested by Mr. Beggs. A point in which I think Mr. Beggs is mistaken is that relating to the examinations by physicians. It seems to me that in all cases where the injured party is not known to the company and nothing known about his residence or associations that an examination by a medical man is a necessity. One of the great difficulties we have to contend with in New York is the unscrupulous character of the doctors who attend the plaintiffs. Old injuries of years' standing are endeavored to be palmed off on the company. Injuries which develop four or five months after the accident are made to relate back to the accident itself, while in the absence of the examination the greatest exaggeration is indulged in by the plaintiff's doctor. We have in the company's employ six physicians. Even with the hard work they do, with all these cases, it is very frequent that we have to try cases without a medical examination. I think the best method of handling accident claims which come in in large quantities is to have a medical examination made of every injured person.

There is one point in the paper which has been presented, which I think is of interest, and I think in view of the progress made by this Association that they should consider it and take a step in advance, that is to say, the execution of the general release by the injured party. I think it must be conceded that it is quite a ridiculous act to put before the ordinary class of man the general release which is the standard in the United States, containing as it does legal verbiage, like such manner of action and actions, suits, debts, dues, sums of money, accounts, reckonings, bonds, bills, specialties, variances, extents and executions. A great many lawyers learned in the profession of the law would have some difficulty in explaining the various terms. It seems to me we should formulate some form of release which would take care of the objections without the great amount of verbiage which is in the document now used. We have had in New York cases which went to our Court of Appeals, some very early cases, which gave force to simple language. In one case, *Coon vs. Knapp*, the receipt read as follows: "Received forty dol-

lars in full for damages done to us, for all demands, on the thirteenth June, instant." The appellate court held this to be a full release and one which could not be attacked by the injured party. The only claim that could be made was to recover the amount of compensation set forth in the receipt. In another case, I find the following language was used: "Received fifty dollars as a compromise for the full amount of my claim." The Court said in that case the use of the word "compromise" was sufficient to make this appear as a settlement, and there could not be any demand made except to recover the fifty dollars consideration. It seems to me that this Association might do well to draft some form of general release which might be used by all its members. I have no doubt there would be litigation over any new form, but in most of the States a simple form of release would be upheld and would greatly facilitate claim agents in taking care of these matters in a more intelligent way.

President Vreeland—Is there any further discussion on this paper, gentlemen? If not, the Chair will order the discussion closed and take up the next paper, which is apparently one of the most important papers. When it came before the Executive Committee last year it produced more discussion before that Committee in arranging these subjects than almost any other. From the considerable correspondence that the Secretary has received, I believe it to be one of the most important questions in connection with high speed, interurban service. There was a very important discussion of the subject in the New York State Railway Association meeting this year and last year; and also in this association last year. The title of the paper is "Signals for Urban and Interurban Railways." The paper was prepared by Mr. G. W. Palmer, Jr., Old Colony Street Railway Co., of Fall River, Mass. I understand Mr. Palmer is here, and we would like him briefly to bring out some of the points in his paper.

REMARKS OF MR. JOHN I. BEGGS.

Mr. Beggs—Mr. President, I regret to say that it is necessary for me to be excused from the meeting. I wish to express my gratification at the interest that has been manifested throughout every business session of this Annual Convention of the Association, and at the able manner in which the business sessions have been conducted and the animation with which the subjects before the meeting have been discussed. It is an evidence of the growing interest of those who attend these conventions in the matters that are brought before it, and should be encouraged. We are under great obligation to the gentlemen who give the thought and time that is necessary in the preparation of the papers which form the basis of the discussions we have at our conventions. I have attended meetings of the Association within the last few years when there was but a very poor representation of the members of the Association, and I have at times questioned whether it paid to come to these conventions. As the President stated on the first day of the convention, there are some who come to these conventions whom it is expected will not receive so very great benefit as the younger men receive from these meetings, who have had less experience, who have just joined the ranks of the army of workers in the street railway field. These are the men who should really gain the greatest benefit from attending these sessions of the Association. There are those who give valuable time in attending these conventions more through a feeling of duty to the business and loyalty to the Association to which we are allied than through any hope of individual benefit. Speaking for the older members of this Association, I can say that they have a deep appreciation of the value of our meetings to the craft generally. I desire, therefore, to give expression to a greater feeling of enthusiasm in the work of this Association than I have had at any session which it has been my privilege to attend for several years past, and I sincerely trust that whoever the officers for the ensuing year may be, that they may have the same loyal and enthusiastic support

that our present excellent officers have received during the past twelve months. I regret that important matters make it necessary for me to be in Milwaukee to-morrow, so that I cannot remain through the balance of this session.

President Vreeland—We are sorry you have to go, Mr. Beggs, and the Chair thanks you for the interest you have taken in the proceedings of this session.

We will now take up the paper on Signals for Urban and Interurban Railways. We will ask Mr. Palmer to introduce the subject and make any brief statement that he desires.

Mr. Palmer—Mr. President and Gentlemen, there have been so many papers presented on this subject, and the discussion of the same has been so wide and so ample, that it is somewhat difficult to present much that is new. My paper, therefore, partakes more of the nature of a general discussion than a presentation of any results of original research. As it is somewhat brief, I will ask the indulgence of the Association and will read the paper.

SIGNALS FOR URBAN AND INTERURBAN RAILWAYS.

The American Street Railway Association—

Gentlemen: The many recent disastrous collisions on street railways must have convinced operators and managers that the use of an efficient and reliable signal system would add to the safety and facility of the handling of their traffic. As faster schedules and heavier cars come into use, there is imperative need of a system of operation which will guarantee freedom from accidents caused by cars meeting head on, or by one car overtaking another.

There is only one way to prevent these accidents: namely, to adopt such rules and methods of operation as will insure that but a single car will occupy any block or section of track at any one time; any signal system which will aid in accomplishing this result is worthy of consideration.

We believe that the steam roads in their early days were confronted with precisely the same problem in relation to signals as the electric roads are now contending with. The steam road signals are now probably as nearly perfect as human skill and ingenuity can make them. They did not, however, spring into existence in their present perfected condition, which has been reached only after years of use and effort to eliminate the defects shown up in practical work.

Electric roads should not, therefore, say "show us a perfect system and we will adopt it." It is decidedly our interest to encourage the efforts of those who are endeavoring to work out something which will be accurate and reliable and to contribute whatever we can to this end.

It is obvious, however, that even a perfect signal system cannot, after its adoption and installation, operate a road. Careful management, and good discipline on the part of the men are still vitally necessary. We believe that no man should be given a second opportunity to disregard a signal set against him or to break any rule which it has been found necessary to make to insure safe operation. The employment of such a man involves a risk which should not be disregarded.

When electricity was adopted as a motive power on street railways, and especially when lines were built between cities, in some cases paralleling steam roads, and invading a field hitherto occupied solely by the latter, many saw that methods which prevailed during horse car operation would not do under condition of higher speed, heavier cars and greater volume of traffic.

The need of something which would show that a car was approaching from the opposite direction, or was a short distance ahead going in the same direction, was quickly perceived and the problem attacked by a number, on various lines, but all having a common end in view. Several systems of block signals were put upon the market, and have since their early adoption and use undergone a process of development to get rid of the faults which became apparent by their continued use.

We believe that all single track suburban and interurban roads should adopt the best obtainable block system together with a telephone system which will enable a dispatcher to reach any car crew at regularly established stations.

A signal to be reliable and efficient, should be quick and positive in action; it should be impossible to set the cautionary or permissive signal at near end of the block before setting the danger indication at the far end; incandescent lamps should not form a part of the main signal circuit, nor should the lighting and extinguishing of lamps be the only visual indication of the signal. This should be supplemented by the movement of an arm or semaphore blade which will move each time the signal is operated whether the lamps burn or not. The device will then be operative if the lamps burn out, as sometimes will happen. Manual control affords unauthorized persons a chance to interfere with the signal, and should not be used; the setting and clearing circuits should be closed automatically, and when the signal has been set at danger it should lock so that it cannot be cleared until

all cars have passed out of the block. It should be possible to set the signal only one way by two cars entering a block from both ends at the same time.

Special attention should be given to freedom from damage by lightning. As the pressure is liable to fall considerably at the ends of long lines, and also on parts of the system when heavy local loads are carried, the signal should be able to operate through a wide range of voltage, and should not be liable to damage through crossing of the signal circuit with the lines.

There are several differing systems now in use on various roads: one using simply a circuit of lamps operated by a two way hand switch at either end of the block, part of the lamps being lit as a permissive signal at the near end, while the balance indicates danger to an approaching car at the far end: this system is peculiarly susceptible to trouble from lightning, and also fails when any lamp burns out. As commonly used the switch and lamps are in the same box, and generally the car is run into a position where the conductor can easily reach the switch. In most cases the motorman then cannot see the lamps and depends on the bell signal from the conductor.

The proper method would be for the car to be stopped at a point far enough to the rear of the box for the motorman and passengers to observe the character of the signal, the conductor going ahead and throwing the switch; where the blocks are many, this will cause an annoying delay, which could be avoided by having the switch separate from the signal box, at a point about a hundred feet to the rear of it, and at such a height that the switch cannot be reached from the ground. When permission to proceed has been obtained, the motorman should not enter the block until the conductor has struck two bells, thus making the men jointly responsible.

An improved method of operating the signal is by means of a circuit closer hung overhead and at a point sufficiently in the rear of the box, the circuit being closed by the passage of the trolley wheel; there are devices of this kind now obtainable which are reliable and effective in action.

A better system is one which uses a setting and clearing circuit separate from the lamp or semaphore circuit; most of these, however, can be cleared by the passage of any one car out of the block, and in case of running several cars together, all trolleys but the one on the rear car must be pulled down when passing the switch, or if the leading car clears the block, the car proceeding in the other direction must be notified of the number of cars following; this is an element of danger, as it should be absolutely impossible to clear a block while any car remains on it.

Some device should be used which will record the number of cars

entering the block from either end, and hold the setting circuit closed until all cars have passed off the block. It should also be possible to clear the danger signal from both ends of the block, as it is often necessary for a car to leave a block from the same end at which it entered.

There are certain single track blocks on the Old Colony system which are operated by means of what is locally known as the "red stick." This is a small club or billet of wood painted red which controls the block to which it belongs, and no car is allowed to enter the block without it carries the "red stick," it being replaced by a red lantern at night. This is a safe but not very flexible system, the absence of the stick showing one that there is a car on the block, but not the direction in which it is going. Nor does it show when the block is cleared from the other end. In case of delay or blockade of cars going in the opposite direction the stick could not be carried back and all cars going in the same direction as the one which first entered the block would be held up. It does prevent effectually the "bunching" of cars at one end of the line.

Double track roads are also feeling the need of some system which will prevent rear end collisions. Where cars are operated on quick headway and a direct view of the track ahead cannot be had, there is always danger of a car overtaking the preceding one. This is particularly the case at night, and all cars operated on suburban lines should carry a rear end red lantern. This simple precaution is so obvious that it would seem as though it must have been adopted by every one. Such, however, is not the case.

There has been some work done along the line of cutting off the trolley current from a car which has not the right of way, thereby making it impossible for the car to proceed. This scheme seems to us to be a very attractive one and it is possible that it may be effectively developed.

Too much stress cannot be laid on the necessity of giving careful attention to the proper erection and maintenance of the signal lines and devices. In regard to the lines, their maintenance is more difficult with us than with the steam roads. We are forced to carry many of our wires in streets lined with thick and heavy trees, through which it seems almost impossible to obtain good and reliable construction. In all such cases special attention should be paid to keeping the wires clear from the limbs and a tough and impervious insulation should be used.

Regular and careful inspections of all parts of the system should be made, and everything done which may be necessary to keep it at all times in the best of condition. No devices should be left without care until they fail to work, which they may do at a time when there is the

greatest need of their reliable action. Efficient maintenance may be expensive, but one accident which might have been prevented may result in a loss far greater than the combined cost and maintenance of a good signal system.

Respectfully submitted,

G. W. PALMER, JR.

President Vreeland—Two gentlemen promised to take part in this discussion, one of whom was to open it, but they were both called away last night and there is no one at present in the hall who has agreed to say anything on this subject. The matter is therefore open for the members of the Association to take up and discuss. This is certainly a very important question, and we will be glad to have a full discussion of it.

Mr. W. B. Potter, Providence—I ask Mr. Palmer what provision is made in his signal system for the second or third car?

Mr. Palmer—I have no signal system. I am not here as the advocate of any signal system. I am simply here as an operating man.

Mr. Potter—I had reference to something I supposed you were using on the Old Colony system.

Mr. Palmer—We have several systems in use on the Old Colony road, one of which is the United States system, which is operated by an overhead contact and does not provide for the counting of the cars into and out of the block. The first car passes over the contact, sets the signal, and the first car out, unless the trolley is removed from the wire, clears it. That feature I regard as a dangerous one. I think for any system to be reliable and safe, that it should be absolutely impossible to clear the block while there is another car on the block from one end to the other. We have also in use the Ramsay system which, as you all know, is simply a circuit of incandescent lamps, part at one end, and part at the other end of the block, and which with us is more efficient as a lightning arrester than as a signal.

President Vreeland—Mr. Wason, whom I asked to say something on this subject, was unexpectedly called home last

night. I asked him if he would not before he left briefly give some of his views on this subject and they largely agree with those of the writer of the paper. Mr. Wason prepared a paper which I will read.

(Remarks filed by Mr. Charles W. Wason.)

Mr. C. W. Wason, Cleveland—Mr. President and Gentlemen: Any system of signals that will prevent accidents is most desirable in street railway work. This is one of the most serious problems the railway manager has to contend with. In trying any new scheme the question at once arises—If the signals fail to work, will the results be more dangerous than at present? I think that is the general feeling among railroad men. They are anxious to find an efficient signal, but do not feel warranted in trying new inventions.

I do not believe any employe should be discharged on the first offense. He may be an old man in the service, and before you are able to educate a new man the latter costs the company much money. I think men running urban and inter-urban cars should be well paid for their services. You cannot get something for nothing. Men with capacity to fill positions on fast running cars cannot be hired at the old horse car rates. A signal system, to be satisfactory, must work at all times and in all weathers, and with any number of cars running in either direction. As lightning frequently burns out lamps on the trolley any system depending upon the main line current must be unreliable.

On double track roads the end-on collision is eliminated, but rear-end collisions occur, even under the best management. The red lantern ought always to be carried on the rear of the car. I think it is required by law in some cities. When an extra car follows the regular car, the green lantern should be carried on the regular car. Where an electric headlight is used the throwing of a portion of the rays in a perpendicular direction often shows the motormen the location of other cars. In this connection, it seems to me that too much attention cannot be given to the braking equipment of the car. This, of course, includes the sand-box and contents.

Money spent in eliminating the curves of a road is well invested in more ways than one.

President Vreeland—Mr. Ira A. McCormack, now with the New York Central Railroad Co., promised to make some remarks on this question, he being familiar with signal systems. Mr. McCormack has been in attendance at the convention, but he also found it necessary to leave last night. He promised he would prepare a paper in connection with the subject. He has done so and left the paper with us; his paper is largely of a statistical nature, and he makes quotations from several authorities on this subject. The paper will be of considerable value in connection with the proceedings of the Association, and we will order the paper printed in the proceedings. (See page 233.)

I want to call attention to one point of many in connection with this paper, and that is the recommendation with reference to the proper signal on the rear of cars. On three railroads, of which I was asked to investigate the physical and operating conditions of the property during the past two years, they were operating cars under steam railroad conditions that prevailed fifteen years ago, as to speed and everything that went with it. With reference to each of these railroads I recommended that they put on proper signal systems—I am now speaking of electrical railroads—to compare with the steam railroads with reference to lights for extra cars, and particularly the rear lights. My recommendations were not regarded in any of the three instances, they being considered as the views of a steam railroad man rather than of a street railroad man, and each of the electric railroads in question have had accidents from rear-end collisions, of which the least cost was \$10,000, and now they are carrying the rear lights and also the other signals that go with them. There are many methods of signals that are open for inspection in various parts of the country; and I say, gentlemen, based upon twenty-five years of operating experience in steam and street railroads that there is no more important question to you (more important than track construction and car con-

struction), than that of proper methods of car dispatching and protection of cars on these high speed interurban roads. As I said at the last convention, there is no collision in the transportation world that can compare with a collision between two electric cars in its dire results. I have had any number of collisions and wrecks to clear up with steam trains, but in all my steam railroad experience I have never seen as bad a collision as occurred between two electric cars. There are two enormous bodies of steel—baggage or express cars—interposed between the points of contact and your passengers on steam trains. In our electric railroad work generally the front ends of the cars are of the flimsiest construction, and that is the point where the motorman rides, and on many roads the passengers are allowed to ride on the seat back of the motorman. In two or three collisions which occurred in New York State last year, and in other parts of the country, there were more people killed and injured than in any steam railroad wreck in the properties I have had to do with, simply for the reason that every one in the front seats was killed in the collision, there being nothing between them and the contact of the two high-speed cars. I would rather, if I were operating a railroad, have two steam trains come into collision at fifty miles an hour than two electric cars at twenty miles an hour. I am satisfied the results would not be so disastrous in the case of the steam cars.

It is very important in the interests of interurban operation, before you are compelled by state and municipal regulations to do these things, to take them up and consider them and do them yourselves. The history of steam railroad signalling is open to you. It is not the theory of any one. It is a scientific development. It has developed from the staff system up and onward. I operated as a conductor twenty-five years ago under the staff system, the system of signalling spoken of in the paper. The little points in connection with these things come back into a man's mind. When the staff system was spoken of it reminded me of something that occurred on the New Haven road where they used the staff system

across one of the bridges, single track, and there were positive orders that no train should proceed over the bridge unless the engineer had the staff in his possession. It was a brass staff. A train came across the bridge and the fireman handed the staff to an engineer on a train which was about to proceed over the bridge and the staff fell through the trestle and went into the river. The road was tied up until some method was discovered of getting across the bridge without the particular brass staff that had been used. Col. Heft will undoubtedly defend the New Haven road.

Mr. Heft—What you say is true, and it only goes to show what a perfect system we have on the New Haven road.

Mr. Bean—Had some one experimented with that staff before they adopted it?

Mr. George W. Dickinson, Seattle—They came from Europe originally. I might say I have had considerable steam practice, and there seems to be a mistaken idea given out here that the steam roads have a perfect system of signals. They have not; neither have the street railroads. They all depend on the human agency, and that will fail sometimes. In the steam practice the desire and the effort have been to reduce the number of chances of misunderstanding by reducing the number of people who control the movement of trains. With us in Seattle we are doing the same thing. We originally installed our interurban service with a telephone system for signalling, and we are about to take the telephone out and put in the telegraph, because we find it impracticable to protect our train orders by telephone. Persons who have no right to answer the telephone will do so, and the dispatcher will send orders, and they get mixed up. We are going to run under the standard rules governing train orders, both as to lights and signals; fuses, rear lights—all in accordance with the standard system of train dispatching.

(Remarks filed by Mr. Ira A. McCormack.)

Mr. McCormack—Mr. President and Gentlemen: At the last meeting of the American Street Railway Association, held at New York, a paper was read by Mr. William Pestell,

and, after having been discussed at some length, Col. Heft recommended that the Executive Committee ask the Committee on Standards to make a report at the next Convention of the best signal system. No doubt this Committee has looked into the matter very carefully and has some report to offer.

I wish to quote from the address of President G. Tracy Rogers, of the New York State Association, as follows:

"The unfortunate recurrence of some half dozen severe and fatal accidents within the present summer brings to the members of this Association, in the most forcible manner, the ever present obligation of ceaseless care and vigilance in the management and operation of their respective roads. It is such a simple matter to lay down a formula for the prevention of such accidents, but so long as human nature is fallible railway accidents can never be wholly prevented. You all know what elements of care, of prudence, enter into this consideration—substantial construction, complete equipment, good discipline, and last of all, but of the highest importance, constant inspection and accountability. We owe it to the public, as well as to ourselves, and to the reputation of industrial and mechanical intelligence, that every safeguard which experience, caution and liberal expenditure of money affords shall be applied to the carrying on of our several enterprises."

Thus the President of one of the foremost Street Railway Associations of the United States has brought to the attention of the members of his Association not only the number of accidents that have occurred during the last year, but very properly calls their attention to what they owe to the public, as the prosperity of a company depends very largely upon the safety of its patrons.

The accidents that he referred to occurred largely on suburban roads. Mr. C. R. Barnes, the electrical expert of the Railroad Commission of the State of New York, read a paper at the Convention of the New York Street Railway Association, which was held at Caldwell, N. Y., on September

9, 1902, and as all the accidents are reported to the Railroad Commission, Mr. Barnes was in a position to talk and speak authoritatively on the matter in question.

In his paper he states that the percentage of passengers injured in proportion to miles of road operated in 1898 was .462; in 1899, .480; in 1900, .450, and in 1901, .559. This shows a steady increase in the percentage of passengers injured in reference to mileage of road, except in the year 1900, when the percentage was less than in the year previous. There has been an increase between the years 1898 and 1901 of .097, or an increase of about 21 per cent.

These figures include all the accidents on all the electric railroads in the State of New York, including city and other roads, and are compiled from the annual reports the companies made to the Railroad Commission. It was the intention of the Commission to classify these accidents, and also to have made a percentage comparison based on car mileage, but the investigation of the number of serious accidents which have occurred recently has occupied so much time that the Commission was unable to make a detailed statement of accidents.

The accidents referred to include the killed and injured resulting from all classes of accidents. The greatest loss of life and injury to passengers on electric railroads in the last five years has been caused by rear-end collisions. The next largest loss of life and injury to passengers has been caused by head-on collisions, and in this comparative line of the causes of death and injury to passengers are the collisions at grade crossings of steam and electric railroads.

After an investigation of the methods of operation of railroads in reference to accidents, he states that it can safely be said that in a large majority of these accidents the primary cause of the accident can be traced to inefficient management of the road, and a large number of the rear-end and head-on collisions, resulting in serious injury to passengers, were caused by motormen running past switches where they were due to meet a car. Several were caused by misunderstanding of train orders transmitted over a telephone system, several

by conflicting orders being given by different officers of the company, some by crews attempting to "steal" a switch, several by crews taking it for granted that a car due at a junction of two lines had passed that point, others by a failure of the block signal system.

There were two cases where motormen have seen a car approaching them on the same track and they continued at full speed with the intention of making the other car back up to the switch, the speed continuing on both cars for the same purpose until it was impossible to stop either.

Two were caused by running special or work cars over the road without notice being given to regular cars.

One head-on collision was caused by a passenger car being used as a work car and not being placarded as such; a regular car met it on a switch where another car was due, and supposing it was the regular car crew ran out onto main line and the two regular cars met in a head-on collision.

Among the causes of rear-end collisions may be mentioned the five hundred feet distance rule in use on a large number of suburban and interurban railroads; cars coming to a stop at points on the road where the view of an approaching car is limited; cars "running away" on grades and on wet and slippery tracks; regular cars running into work cars standing on the main track without protection; broken trolley wheels leaving the car standing upon the main track without lights; trains being run in sections without the rear end of the first section being properly protected and a number of other causes.

The *Street Railway Journal*, of August 16, 1902, in an editorial headed "Block Signal System for Electric Railways," states that several bad accidents which have occurred on electric railways during the past three or four weeks have called attention to the demand for reliable block signals on electric railways, and states justly that the electric railway is at a disadvantage in some respects with a steam railroad when it comes to the introduction of a block signal system, because on the latter the rails can easily be insulated from

each other, so far as the voltage of a low primary battery is concerned. This fact can be utilized in a block signal system, so that the passing of a train over the track can be used to short circuit the rails through the car axles and thus operate the block signal apparatus. On the other hand, the electric railway has an advantage over the steam railroad through the fact that a five hundred volt circuit is always available and this current can be employed for signalling purposes in a way not possible on the steam railroads.

The editor did not claim by this that any, or all, of the present methods of block signalling in use on electric railways are perfect, but he did believe that the greatest factor in any system of this kind is the carefulness of the employes, and the maintenance of an intelligent set of rules for the manipulation and use of the safety appliances.

In another editorial in the same journal it is stated that another example of the importance of having some reliable system of block signalling on high speed interurban electric railways was shown last month, by a very bad head-on collision on the new third rail electric railway extending from Milan, Italy, to Porto Ceresio. This line, which was formerly operated by steam, extends from Milan north to Lake Lugano, and is equipped with the third rail electric system. The precautions against accidents have seemingly been fairly good, in that the trains are dispatched from regular turnouts by employes of the company, and no train is allowed to proceed beyond a turnout without special orders. The accident in question, however, indicates that any system of this kind which depends upon human judgment is fallible. The station master at Porto Ceresio station, finding that the train which was due at that point at a certain time was late, assumed that he could stop it at the preceding turnout, and telegraphed to the station master at that point to hold the train there. Then without waiting for an answer he ordered the train at his station to proceed. The north train, however, had left the other station before the receipt of the telegram, and the result was a bad collision between the turnouts,

in which two passengers were killed and thirteen badly wounded. Unfortunately, it did not occur to either of the dispatchers after the trains had left their stations, and they knew that an accident was almost inevitable, to switch off the current from the third rail. This of course, would have brought both trains to a stop, and the engineers of both would have been notified of the condition of affairs. This possibility of the control over a train after it has left the station is one great safeguard in electric operation, although in this particular case no advantage was taken of it.

Mr. H. D. Emerson, in an article in the *Street Railway Journal* of August 16, 1902, on "Block Signal Systems for Electric Railways," states that it would appear that the English "train staff" system, which is operated by nearly all of the single track steam railroads in Great Britain, and which, with various modifications, is used all over the world, is the best system for operating on single track roads; but, he only recommends this until a company is a prosperous one and is earning dividends so that the directors would be willing to have expenditures made for permanent improvements, permitting permanent block signals which can be operated either automatically or by hand. He also states that if operated by hand they should be so arranged that the lever is out of reach of people standing on the ground, so that when it is thrown for the block it cannot be changed until the car has passed the next block. Any block signal system should be so arranged that if any accident happens to it or the line becomes deranged, or the mechanism gets out of order, it will show the danger indication.

He further states that if it is desired to use the block theory and operate by means of permanent signals controlled either by electricity or air at the ends of the block, certain principles thoroughly established by many years of disastrous experience should not be overlooked. The first is that the signal should be simple and should have but two indications, it should say definitely clear, or definitely blocked; that is, it should say "go" or "stop." This can be best accomplished

by the semaphore arm. When it is horizontal or extending over the track everyone understands that it means "stop," whereas if it is dropped at an angle it indicates "clear," and the car can proceed. In the same way the lights for night signalling should be position signals; two red lights horizontally placed indicating "stop" and two green lights vertically indicating "clear." This is the result of signal practice the world over, and is understood and is understandable by all concerned in railway operation, and by most of the patrons of railroads. The cost of providing signals as described would not be any greater than the cost of providing the present signals now installed on many lines.

In quoting from the articles as I have, I not only wish to impress upon your minds the importance to you as individuals in managing electric suburban railways, but also the duty that you owe to the public of installing some efficient and safe block signal system on high speed electric roads.

The American Street Railway Association at last year's Convention, held in New York, had a paper on this same subject, and in assigning the subject for the Convention this year has realized the importance of block signalling, and from the fact that they have taken this action, in my opinion, no manager, who is a member of this Association, can afford to neglect considering and installing some system of signals which will add to the safety of the patrons of his road.

There are at present two kinds of electric automatic block signals patented. One for overhead trolley lines, whereby the trolley striking a mechanical appliance sets the block signal behind the train, and also sets one ahead of it.

The other is the third rail system whereby a section of the third rail behind and a section of third rail ahead of the train are used and the power is taken from the third rail setting signals behind and ahead of the train so that it is almost impossible for trains to have head-on or rear-end collisions.

There is, of course, mechanism attached to both of these systems that is liable to get out of order and a collision result

therefrom, but the principle, to my mind, to work on is to adopt something that has some merit of protection. You cannot afford any longer to operate a single or double track high-speed railroad without some kind of protection.

For the information of the members I wish to state that the automatic blocking of trains in steam railroad practice within the last year has received more attention from steam railroad managers than it ever has in the past. This is due primarily to the fact that the large trunk lines have acquired larger terminal facilities for the handling of a business which is larger than the capacity of the main tracks under the present manual blocking system. In the past all the manual blocks were placed at considerable distances apart, which was done owing to the large cost of maintenance and help. The traffic handled over lines with such a system was greater than the capacity of the terminals, but as stated, the terminal facilities have been increased and there must be an increase in the traffic over the main line, and in considering this the managers have taken up the question of placing automatic signals at short distances apart.

Last year at the New York Convention I was asked by the then President, Mr. Walton Holmes, to open the discussion on the paper read by Mr. Pestell on this subject, and I stated at that time, that the suburban roads must go to steam railroad practice in formulating rules and operating signals on the same principles as the steam roads operate them.

In connection with this there is at present in operation on steam railroads block stations operated manually under the Sykes Lock & Block system; the pneumatic system, whereby the semaphores are thrown by air after being manipulated in the towers by men; the Union Switch & Signal Company's automatic system, which is a rail circuit system, and when a train goes out of a block the circuit is broken and the mechanism sets the signal at danger behind the train, and when it passes the next signal it breaks the circuit and sets the signal at danger, and then after going a certain distance it closes the circuit on the second signal in the rear, which puts it at safety or clear.

The Hall Signal Company has two systems for automatic blocking. In one they use a track instrument which breaks the circuit, setting the signals after it at danger or safety as the case may be; and the other is a rail circuit system wherein, in breaking or closing the circuit, the semaphore is put to danger or safety by the use of gas, which is placed at the signal in a large holder, and which has the capacity for a great many operations.

I was connected with the Hall Signal Company when they installed the disk signals on the Galena, Wisconsin & Milwaukee Division of the Chicago & Northwestern Railroad, and on the Chicago Division of the Illinois Central Railroad, for the handling of the World's Fair business. The system put in on the Chicago & Northwestern was the track instrument, and that on the Illinois Central was the rail circuit system. Both systems worked perfectly and they handled the large business due to the World's Fair without a single accident or failure.

The track instrument used by the Hall Signal Company is a lever which works on a balance and is held down by compressor springs, so that when the tread of a wheel runs over the instrument it either breaks or closes the circuit, whichever the instrument is designed for. This system could be used on interurban roads, and is at present installed on the Metropolitan Underground Railroad, of Paris, and the Fairmount Park Railway, of Philadelphia, both of which are operated by electricity.

The third rail system that I have mentioned is the Farnham system where the circuit is taken from a section of the third rail ahead of and in the rear of the train. While I made an inspection of this system I cannot speak assuredly of it as its use has not been long enough to give the system a thorough trial, but it has a great many things to recommend it.

The Miller system, which we are installing in the tunnel in New York City on the New York Central & Hudson River Railroad, is a visible signal in the engine cab, which shows

the block signal ahead to be either clear or at danger, and it has a great many things to recommend it; for instance, the signal is in the cab of the engine in view of the engineer or operator.

As a suggestion I would recommend to the Committee on Standards that they procure the details of operation of the several signal systems used by steam railroads, and their recommendations. As the price of the different kinds of signals varies, a road could then adopt whichever its circumstances would permit.

In conclusion I wish to thank you, Mr. President, for the kind invitation which you extended to me to discuss the question of block signals at this meeting. Having left the electric service to again enter the steam railroad service, I appreciate the invitation to come here, particularly as old associations are very strong with me.

President Vreeland—If there is nothing further on this subject, we will close the discussion. We have been fortunate in having sufficient time at our disposal to give each paper and topic presented ample attention. There is only one paper left. It is the paper on the "Discipline of Employes by the Merit System," by Mr. W. A. Satterlee, General Superintendent of the Metropolitan Street Railway Co., Kansas City, Mo. There is little in the paper except what is statistical and as it has been distributed to the members there will be no need for reading it.

DISCIPLINE OF EMPLOYES BY THE MERIT SYSTEM.

The American Street Railway Association—

Gentlemen: The merit system of discipline, as applied by managers of steam railways throughout the country, has recently been brought to the attention of street railway managers, through able articles in the *Street Railway Journal* and *Street Railway Review*, in such a way that the system is now receiving much attention. It has been adopted by a number of roads, and their experience with it has been such that it is surely worthy of deep thought and attention on the part of all street railway officials. It seems to fill a long-felt want in street railway discipline, and, in importance, is second to none of the recent im-

provements and betterments constantly being adopted and in successful operation.

I know of no single change made in the old methods of operation, unless it be the adoption of the Standard System of Street Railway Accounting, that should receive a more hearty support from all. Certainly no system has been adopted that is fairer to the trainmen, or is more likely to produce in them a desire to keep their record clean, and as many demerit marks from appearing against them as possible.

There are many trivial acts, small in themselves, committed by trainmen in handling passengers, that as a whole tend to produce a feeling on the part of the traveling public either favorable or unfavorable to the company, which once formed is hard to offset. Small acts of courtesy toward passengers by trainmen are felt by the management in ways unknown to the men who perform these acts, and are as far-reaching for the good of the company as small acts of discourtesy are damaging.

To teach employees to be guarded in their talk, their acts, and their deportment on duty toward those with whom they come in contact, is a problem nearer solved in the merit system than in any other way.

The value of courteous, accommodating and careful trainmen to any street railway system is of such importance, and so eagerly sought for, that any method of discipline which will accomplish that end will be of so great worth as to make management of street railway property a pleasure instead of care and worry that breaks down the health of any but robust men.

As a rule, men who seek employment in the train service of street railway lines are inexperienced in the art of handling the public in the way an exacting public expect, and acquire the tact only by continuous contact and experience, after training under some system of discipline worked out by those who, for years, have watched the needs and exactions of a people who expect the same attention from an inexperienced street car conductor, who may have been in the service only a few weeks, that they get from a steam railway conductor who has been under a system of training with his company for from eight to ten years before he has acquired the position where he comes in contact with the traveler.

To give the street railway public the service which they expect, and which they exact, is the aim and desire of all managers, but is a well-nigh impossible thing to do. To come as near the goal as human ingenuity can, may be done through the different experiences and methods used by well-managed roads, and by discussions and friendly criticisms brought about through the several papers written by different parties for this convention, and it would appear to me that the sub-

ject assigned to my company is one that should call forth from all representatives present a most interesting and instructive debate.

In brief, the system consists of a debit and credit account with each trainman; kept in a book ruled for that purpose, or in alphabetical files, his violation of rules being charged against him by a certain number of demerit marks, the number for any one offense depending upon the seriousness of same. As an offset against these demerit marks, he is entitled to receive a certain number of merit marks for acts performed which would be considered by the company worthy and deserving of recognition.

If at any time within one year the demerit marks exceed the merit marks by a certain number fixed upon by the company, then the party receiving them is liable to discharge.

The detail of the working of the system as practiced by the company with which I am connected, but which can be varied to suit the ideas of different operators, is as follows:

A list of violation of rules with the number of demerits imposed for each is posted in frames at each reporting place, that trainmen may know in advance the penalty, and also a list of acts considered worthy of merit with number of merits given for each.

A blank notice, made in carbon copy which is filed in the office, reading as follows, is sent to each trainman, with his name filled in blank space, whenever he gets demerits or merits:

METROPOLITAN STREET RAILWAY COMPANY.

Kansas City, Mo.....190....

DEMERIT MARKS.

Mr.....

.....

You have to-day been given DEMERIT MARKS on charge
No..... contained in the merit system of discipline.

Date.....

Time.....

Place.....

.....

Assistant Superintendent.

METROPOLITAN STREET RAILWAY COMPANY.

Kansas City, Mo.....190....

MERIT MARKS.

Mr.....

You have this day been given merit marks on No.....
contained in merit system of discipline.

Time.....

Date.....

Place.....

.....
Assistant Superintendent.

Another notice, without trainman's name, is posted on board at reporting place, as notice to all other men that a conductor or motorman has been disciplined, with the charge, and number of demerit or merit marks he has received.

METROPOLITAN STREET RAILWAY COMPANY.

NOTICE.

Kansas City, Mo.....190....

A.....on.....line has this day been
given..... marks on charge No..... in merit system of
discipline.

.....
Assistant Superintendent.

Whenever a man's demerits exceed his merits by 100 he is liable to discharge.

The old system of lay-offs and fines has been done away with and the service much improved in the short time the new system has been in vogue, since June 1st, 1902.

Merit No. 10 for conductors (No. 9 for motormen) is broad enough to cover many things coming under the observation of inspectors, that show good judgment and interest in handling the public, and in such cases a liberal giving of merit marks will be appreciated by trainmen, and will redound to the profit of the company. A little praise given any employe by an employer is worth more and is more productive of good work tenfold than any reprimand. We all, no matter what position we hold, are pleased with notice taken of our work by those who are our immediate superiors, and a word of praise coming from a superintendent or manager to any employe working under the merit system will certainly not be lost.

The trainman who takes off his coat and gets to work first in a lay-out caused by a broken-down car or a wire down, etc., marks him-

self right then and there as a man the company needs, and he should get merit marks. If he takes an interest in clearing up such trouble, it is safe to say he will take the same interest in other matters. Too many men wait for some other man to take the lead and in that way much valuable time is lost in blockades, when there is no incentive or reward to spur them on. Those with demerit marks wait for an opportunity to reduce the number by getting enough merits to offset their demerits, and come to the front in case of trouble, showing by their desire to render assistance an interest in company matters not shown before. Whenever men can be taught to take the same interest in their employer's business they would in their own business, then that employer will get the most perfect service possible, and when the employer succeeds in getting a system of discipline that will bring about that result, then he has what has long been sought for, and until some system has been discovered better than the merit system, the latter should receive the hearty support and assistance of all managers of street railway property. Good train service is the vital cord in operation and trainmen make it good or bad according to their training.

METROPOLITAN STREET RAILWAY CO.

MOTORMEN AND GRIPMEN—DEMERITS.

Immediate Discharge.

1. Disloyalty to company.
2. False statements.
3. Intoxication.
4. Dishonesty.
5. Gross ungentlemanly conduct.

	Demerits.
6. Failing to report accidents.....	10 to 100
7. Missing—	
First time	10
Second time in one month	20
Third time in one month	30
8. Smoking on duty	30
9. Failure to make safety stop at crossings where required.	30
10. Incomplete and poor accident reports	1 to 5
11. Untidy condition of dress	2
12. Recommending unworthy men for employment.....	5
13. Neglecting to pick up passengers	10
14. Running over circuit breakers and overhead crossings without throwing off current	5
15. Allowing unauthorized persons in front vestibule.....	5
16. Fast running	5

17. Front headlight not burning	8
18. Entering saloons in uniform without good excuse.....	10
19. Frequenting saloons at any time	50
20. Gambling	50
21. Drinking on duty or before going on duty.....	20
22. Disobedience of orders (if flagrant—discharge).....	10
23. Profanity on duty	5
24. Accidents when avoidable in opinion of superintendent..	10 to 100
25. Unnecessary conversation with passengers	10
26. Talking to conductors on duty	5
27. Failing to report trouble with car.....	5
28. Not answering signals promptly	1
29. Feeding current too fast	3
30. Running away from passengers at transfer points.....	10
31. Not ringing bell in passing car	2
32. Running ahead of schedule time	3
33. Not slowing up in passing car	5
34. Skinning the cable	25
35. Starting car without proper signal, except to avoid col- lision	20
36. Following car in front too close	10
37. Starting electric car before closing gates	10
38. Opening electric gates before car stops.....	10
39. Running too close to wagons upon track before getting car completely under control	10
40. Bad judgment on special occasions	1 to 10
41. Leaving car without taking reverse lever	10
42. Flattening wheels	10 to 20
43. Injury to car equipment that could be avoided by proper care and judgment	10 to 20
44. Not stopping for passengers to get on (if at proper place)	10
45. Not obeying conductor's signal	5
46. Running crossings without proper flagman's signal where required	20
47. Cutting rope	25 to 50
48. Trouble with passengers when gripman or motorman is to blame	10
49. Garnishee— First time	10
Second time	10 to 50
Third time	50 to 100
50. Assignment of wages or security deposit.....	25
51. Talking to others than proper officers of company about accidents	20

52. Careless and indifferent operating of car.....	3 to 10
53. Criticizing management of road in presence of passengers	3
54. Failing to report delays	2
55. Not having proper tools	3
56. Plugging car except to avoid accidents	5
57. Running without sand in sand box	3
58. Acts detrimental to good service in opinion of superintendent	3 to 20
59. Incompetency	25 to 100
60. Holding train with cable	10

MOTORMEN AND GRIPMEN—MERITS.

	Merits.
1. Warning persons in act of jumping on or off moving car to wait for car to come to stop.....	2
2. Securing names and addresses of witnesses who saw accident, other than those on accident report.....	2 to 5
3. Politeness and attention to passengers noticed by inspectors	3
4. Assistance rendered in case of accident, such as to bring commendation from passengers	3
5. Informing company of matters in the interest of good service, etc.	3 to 10
6. Complete and perfect accident reports	2
7. Good stop in avoiding accident	5
8. Good judgment and work in handling lay-out or blockade	2 to 5
9. Special meritorious act calling for recognition from company	10 to 50
10. Careful handling of car	5

CONDUCTORS—DEMERITS.

Immediate Discharge.

1. Disloyalty to company.
2. False statements.
3. Intoxication.
4. Dishonesty.
5. Gross ungentlemanly conduct.

	Demerits.
6. Failing to report accidents.....	10 to 100
7. Giving bells too quick.....	5
8. Smoking on duty.....	30
9. Error on trip sheet.....	1 to 5
10. Shortage.....	}
11. Overage (except when pay check is turned in) }	
Over six in one month, each.....	2 to 5

12. Missing fares.....	3 to	10
13. Failing to ring fares.....	5 to	20
14. Failing to properly flag crossings when required.....		10
15. Incomplete and poor accident reports.	1 to	5
16. Inattention to passengers		2
17. Trouble with passengers when conductor is to blame.....		10
18. Missing—		
First time.....		10
Second time in one month.....		20
Third time in one month.....		30
19. Dirty car.....		5
20. Untidy condition of dress.....		2
21. Recommending unworthy men for employment.....		5
22. Back headlight burning except in case of fog.....		1
23. Reading on duty.....		10
24. Sitting down in car on duty (when running).....		5
25. Talking to motorman or gripman on duty.....		5
26. Letting boys change trolley		5
27. Entering saloon in uniform without good excuse.....		10
28. Frequenting saloons at any time.....		50
29. Unnecessary conversation with passengers.....		10
30. Accident when avoidable in opinion of superintendent...	10 to	100
31. Failure to announce streets.....	1 to	5
32. Profanity on duty.....		5
33. Disobedience to orders (if flagrant—discharge).....		10
34. Error in punching transfers.....		2
35. Deliberate punching of transfers to permit passengers to lay over		20
36. Gambling		50
37. Drinking on duty or before going on duty		20
38. Running away from passengers at transfer points.....		10
39. Bad judgment on special occasions.....	1 to	10
40. Bad judgment or carelessness in regulating heat on cars..		2
41. Criticising management of road in presence of passengers		3
42. Neglecting to get transfers enough at barn to avoid bor- rowing.....		2
43. Talking about accidents to others than proper officers of company		20
44. Register not turned at end of line.....		10
45. Not in proper place on car.....		3
46. Careless and indifferent operating of car.....	3 to	10
47. Giving bells when not in proper place.....		5
48. Impolite remarks to passengers.....	5 to	25

49. Garnishee, 1st time	10
2d time	10 to 50
3d time	50 to 100
50. Assignment of wages or security deposit	25
51. Failing to report register when out of order.....	3
52. Not going ahead and trying to locate cut rope or broken trolley when same is cut or down.....	5
53. Failing to report delays.....	2
54. Acts detrimental to good service in opinion of superinten- dent	3 to 20
55. Incompetency	25 to 100
56. Bunching fares.....	5
57. Carrying people free.....	5 to 10

CONDUCTORS—MERITS.

	Merits.
1. Warning persons in act of jumping on or off moving car to wait for car to stop.....	2
2. Securing names and addresses of witnesses who saw accident, other than those on accident report.....	2 to 5
3. Politeness and attention to passengers noticed by inspect- ors	3
4. Assistance rendered in case of accident such as to bring commendation from passengers.....	3
5. Adjustment of shades and windows to please passengers.	1
6. Informing Company of matters in the interest of good service, etc.....	3 to 10
7. Reports as to defects in equipment while operating car..	1
8. Complete and perfect accident reports.....	2
9. Good judgment and work in handling lay-out or blockade.	2 to 5
10. Special meritorious act calling for recognition from Com- pany	10 to 50
11. Turning in passes or badges ordered up by Company....	5

Respectfully submitted,

W. A. SATTERLEE.

President Vreeland—I ask Mr. Harrington to open the discussion on this paper.

Mr. W. E. Harrington, Camden, N. J.—The paper just presented by Mr. Satterlee is a valuable contribution and is a clear and concise statement indicating the tendency of recent practice in disciplinary methods. The interest taken in the subject of discipline, the method, the rule of procedure and the relation the employer should bear to the employe has

never been greater than at the present time. The individuality of the employer has as much, if not more, to do with the results of any system of discipline than the system itself. A system is not a panacea. It is conceded by all that the old method of suspension for violation of rule is not fruitful of good results. The reasons for this conclusion are too well known to be discussed here.

Certain facts have become patent as being essential to any system of discipline, to-wit:

(A) The keeping of a thorough history of each employe from the date of his employment, showing clearly all irregularities, violations of rules, relation to complaints, accidents, and secret service.

(B) The employe to receive a hearing, to be treated with consideration, to be given an opportunity to explain under proper conditions and surroundings his position, before discipline be accorded.

Any system in which the employe is disciplined, conforming to the above features, will conduce to better feeling and be followed by generally better results.

Experience has dictated that in exercising discipline great care must be observed in not passing judgment until all facts have been thoroughly investigated.

Experience has furthermore demonstrated that the various misdeeds, violations of orders, breaches of discipline of the employe, in some way or another, are brought to the attention of the employer; whereas, the commendable acts, the little refinements of courtesy, tact, observance of duty and rules, that may be the practice of the employe, are seldom known of and are really and legitimately expected.

Threats are not conducive to good discipline, to good results. What good can possibly come from balancing bad against good? When bad is from the very nature of things bound to crop out and be known, while good is less apparent, less known and never as strenuously obtruded upon us? Wherein does the good, conscientious, able, trustworthy employe profit from a system of merits and demerits? It does

not seem that the merit and demerit system reaches the core. I have in mind men who would not care in the slightest whether they had ten or one hundred demerits, or merits, they will run the chances of detection in just the same fashion certain conductors will run the chances of detection in the matter of irregularities in fare registration. However, let those same men actually lose something, though it be but a little, in their standing in the grade, class or seniority—it need not, and in fact better not, be an action that would eventually hold out the threat of discharge—what is the result? The punishment is immediate, the penalty is made at once, the evil doer suffers and, what is more advantageous, the worthy, painstaking employe receives immediately what he is entitled to—recognition and advancement.

I have tried the suspension system, the merit and demerit system, and abandoned them both after careful and persistent trial and effort.

The demotion system was first put into effect upon our railway just about two and a half years ago, and has been gradually developed into a thoroughly operative, practical system and conducive to the best results.

Under this system an employe for any irregularity is notified that he will be demoted one or more points on the seniority list if proper explanation be not made on or before a specified date. This notice with an account of the irregularity is posted on the bulletin boards at the meeting places of the men. This usually results in the men whose names are posted arranging to meet the general manager, affording an excellent opportunity to exercise judgment in enforcing discipline. The most wholesome effects are most noticeable, and efficient and reliable employes under this system forge gradually and surely ahead, obtaining the best and most profitable runs at the disposal of the company, and in such men the general stability of the working force is maintained against any possible disaffection upon the part of the men suffering from demotion. It can be seen that this system, while not directly taking cognizance of the efficient employe, in fact does take the most pronounced action in his behalf.

President Vreeland—This subject is before you for any brief discussion desired. Apparently, no one else cares to be heard on this subject, and as we have finished the regular papers, we will close the proceedings of the Convention. I will read the following announcement:

SUBJECTS FOR REPORTS FOR THE NEXT MEETING.

The pronounced success which has characterized the business meetings of this convention has been due to the fact that papers have been presented upon subjects which are of vital importance to every street railway, no matter what its environment may be, and these papers have been actively discussed by a large number of our members. For this reason we hope that all of our members will give thought to the matter of subjects on which papers shall be presented next year. The Secretary will issue a request to members, asking for suggestions as to topics for papers, and we hope the members will give the subject careful consideration, and that when they suggest subjects they will also indicate a proper person to write on the subject.

Secretary Penington—I desire to thank personally the writers of all the papers for their promptness in forwarding copies of their papers so that they might be printed in ample time before this meeting. This helps the work of the Secretary very greatly. I received all of the papers about five weeks before the date of this meeting and had them in the hands of the members fully two weeks before the Convention.

President Vreeland—We will have the report of the Committee on Resolutions.

REPORT OF THE COMMITTEE ON RESOLUTIONS.

The American Street Railway Association—

Gentlemen: Your Committee on Resolutions submits the following report for adoption:

Resolved: That the thanks of the American Street Railway Association be tendered to Mr. Jere C. Hutchins, and his able assistants, for their efforts in our behalf during the convention;

To the Exhibit Committee, especially its Chairman, Mr. John H. Fry, for the very complete arrangements made for the exhibit and the satisfactory manner in which they have been carried out;

To the Supplymen for the magnificent manner in which they have conducted their exhibit at this meeting;

To the Local Press for the very complete and intelligent reports of the transactions of the Convention;

To the several Passenger Associations which have granted the reduced rate of a fare and one-third to the persons attending this meeting;

To the President and the other officers of the Association for the able manner in which the affairs of the Association have been conducted during the past year, and to all who have in any way contributed to the success of this most interesting Convention.

Respectfully submitted,

W. WORTH BEAN,
G. W. DICKINSON.

On motion, the report of the Committee on Resolutions was unanimously adopted.

President Vreeland—We will now receive the report of the Committee on Nominations.

REPORT OF THE COMMITTEE ON NOMINATIONS.

Detroit, Mich., October 10, 1902.

The American Street Railway Association—

Gentlemen: Your Committee on Nominations respectfully report recommending the following list of officers for the ensuing year:

For President,

JERE C. HUTCHINS,

President Detroit United Railway, Detroit, Mich.

For First Vice-President,

W. CARYL ELY,

President International Railway Co., Buffalo, N. Y.

For Second Vice-President,

W. KELSEY SCHOEPP,

President Cincinnati Traction Co., Cincinnati, O.

For Third Vice-President,

P. S. ARKWRIGHT,

President Georgia Railway and Electric Co., Atlanta, Ga.

For Secretary and Treasurer,

T. C. PENINGTON,

Treasurer Chicago City Railway Co., Chicago, Ill.

For Executive Committee,

PRESIDENT, VICE-PRESIDENTS and

HERBERT H. VREELAND, President Interurban Street Railway Company, New York, N. Y.

RICHARD T. LAFFIN, General Manager Worcester Consolidated Street Railway Company, Worcester, Mass.

ANDREW RADEL, Vice-President Middlesex and Somerset Traction Company, Bridgeport, Conn.

WALTER P. READ, Vice-President Consolidated Railway and Power Company, Salt Lake City, Utah.

WILLARD J. HIELD, General Manager Twin City Rapid Transit Company, Minneapolis, Minn.

The committee have received but one invitation for a place for holding its next annual meeting. Mr. J. W. McFarland, Superintendent of the Chattanooga Electric Railway Company, Chattanooga, Tenn., appeared before the committee and extended an invitation on behalf of his company and the city. Owing to the limited information in possession of your committee, we do not feel warranted in recommending Chattanooga as the next meeting place, but do recommend that the matter be referred, with full power, to the incoming Executive Committee.

Respectfully submitted,

ROBERT S. GOFF, Chairman.

N. H. HEFT,

D. B. DYER,

RICHARD McCULLOCH,

CALVIN G. GOODRICH,

Committee on Nominations.

Mr. Root, New York—I move that the Secretary be authorized to cast the ballot of the Association for the officers named by the Committee on Nominations. (Carried.)

The Secretary duly cast the ballot and the gentlemen were declared elected.

President Vreeland—We will adjourn, on the motion of some member, to meet at the banquet to-night, and in accordance with the usual custom the installation of the new officers will take place at the banquet. The President will reserve his remarks with reference to the business proceedings of this Convention until that time.

Mr. Heft—I move that the meeting adjourn until eight o'clock this evening at the Hotel Cadillac.

Adjourned.

REPORT OF THE COMMITTEE ON MEMORIALS.

Messrs. Foster and Nicholl were appointed a Committee on Memorials by President Vreeland, at the meeting of the Executive Committee, and they filed the following report:

WALTER V. CROUCH.

Walter V. Crouch, Secretary and Treasurer of the New Orleans and Carrollton Railroad Co., New Orleans, La., died May 16, 1902, at the age of seventy-six years. He was born in Richmond, Va. He started in business at the age of seventeen years, and was continuously engaged in active business, except for four years during the Civil War.

Mr. Crouch lived in New Orleans for fifty-four years, and for twenty-five years had been Secretary and Treasurer of the New Orleans and Carrollton Railroad Company. His attention to the affairs of the company was constant, and he saw many changes in the personnel of the officers during his many years of service.

DELL H. GOODRICH.

Dell H. Goodrich, Secretary of the Omaha Street Railway Co., died at his home on May 11, 1902. Mr. Goodrich was born at Brandon, Vt., May 13, 1848. His early business experience was gained in the employ of Bradstreet's Mercantile Agency. He afterwards went to St. Louis as a representative of the R. G. Dun Co., and in 1876 went to Omaha as the manager of that Commercial Agency. Later he was Superintendent of the City Water Company. In 1887 Mr. Goodrich was one of the organizers of the Omaha Cable Tramway Co., and when that company was consolidated with the Omaha Street Railway Co., he became secretary of the consolidated company. Mr. Goodrich is survived by a widow and three children, to whom he was a devoted husband and father.

J. BANNISTER HALL.

J. Bannister Hall died in the City of Baltimore, Md., February 4, 1902, in his sixty-sixth year. He was Secretary and Treasurer of the Charleston Railway, Gas & Electric Co. He was born in Baltimore in 1837, of Irish descent. Mr. Hall for many years was a member of the Corn and Flour Exchange, of Baltimore, and later was the Maryland Manager of the Massachusetts Mutual Life Insurance Co.

He subsequently became one of the original members of the Board of Directors of the Charleston Railway, Gas & Electric Co., and was elected to the office of secretary and treasurer, which position he held at the time of his death. Mr. Hall was highly esteemed for his estimable qualities of character, and is survived by four children.

C. C. HOWELL.

C. C. Howell, General Manager of the Knoxville Traction Co., died May 7, 1902, at Phoenix, Arizona. He had gone to that place in the hope of improving his health, which had been in poor condition for some time. Mr. Howell moved to the West at an early age, and laid the foundation of his useful career and comfortable fortune. He went to Knoxville in 1895, and was the main mover in the consolidation of the competing electrical interests, having consolidated the street railway and electric lighting properties. He was a member of the Knoxville Chamber of Commerce, Vice-President of the City Hospital, and an ex-member of the State Legislature, as well as a director of many financial enterprises. He leaves a wife and two daughters.

WINFIELD SCOTT STRATTON.

Winfield Scott Stratton, President of the Colorado Springs Rapid Transit Co., died September 14, 1902. Mr. Stratton was a man of very large wealth, which he had accumulated in mining operations. He was born in Indiana in the year 1848, and was educated in the schools at Jeffersonville, in that state. He had varying experiences in life until 1891. In that year he located a "claim" which netted him sufficient means to develop the mining properties under his control, and his vast wealth, estimated at \$20,000,000, thereafter accumulated very rapidly.

THE EXHIBIT.

The exhibit at Detroit showed no lack of interest in this feature which has become so important a part of the annual conventions, either on the part of the suppliers, in their desire to place their goods on show, or on the part of the railway men to inspect them. At no previous exhibition in connection with the conventions has so much taste been displayed in the

arrangement of the exhibits, and the drapings of the booths, to give them an attractive appearance. As the space at the disposal of the exhibitors this year was somewhat limited, every effort was made on the part of each exhibitor to present his wares in the most effective manner. The use of electric signs bearing the names of manufacturers and their goods was very noticeable and the compactness of the display had a pleasing effect.

The Board of Public Works of the City of Detroit permitted a large portion of the street, adjoining the hall, to be enclosed with a temporary shed, and this made it possible for the heavy exhibits, such as motors, trucks and cars, to be displayed under this shed, without the necessity of carrying them into the building; an arrangement much appreciated.

The exhibitors were unanimous in their praise of Mr. John H. Fry, the Chairman of the Exhibit Committee, and his assistants, for the complete arrangements he made to care for them, and for the courteous and painstaking manner in which every need was attended to.

EXHIBITORS.

Following is a list of the exhibitors at the Detroit Convention:

Adams & Westlake Company, Chicago, Ill.
Allen & Morrison Brake Shoe & Manufacturing Company, Chicago, Ill.
American Arithmometer Company, St. Louis, Mo.
American Brake Shoe Company, Mahwah, N. J.
American Car Seat Company, Brooklyn, N. Y.
American Electric Switch Company, Pittsburg, Pa.
American Machinery Company, Grand Rapids, Mich.
American Railway Supply Company, New York, N. Y.
American Steel & Wire Company, Chicago, Ill.
American Trackbarrow Company, Lowell, Mass.
American Vestlette Company, Cleveland, O.
Armspear Manufacturing Company, New York, N. Y.
Atlas Railway Supply Company, Chicago, Ill.

Baltimore Ball Bearing Company, Baltimore, Md.
Bethlehem Steel Company, South Bethlehem, Pa.

Bishop Gutta Percha Company, New York, N. Y.

Blair, John F., Detroit, Mich.

Brady Brass Company, New York, N. Y.

Brandeau, George F., Utica, N. Y.

Brill Company, J. G., Philadelphia, Pa.

Brown, Harold P., New York, N. Y.

Burnham, Williams & Company, Philadelphia, Pa.

Camp Company, H. B., Aultman, O.

Cheatam Electric Switching Device Company, St. Louis, Mo.

Christensen Engineering Company, Milwaukee, Wis.

Climax Stock Guard Company, Chicago, Ill.

Conant, R. W., Cambridge, Mass.

Consolidated Car Fender Company, New York, N. Y.

Consolidated Car Heating Company, Albany, N. Y.

Continuous Rail Joint Company of America, Newark, N. J.

Crane Company, Chicago, Ill.

Creaghead Engineering Company, Cincinnati, O.

Crocker-Wheeler Company, Ampere, N. J.

Curtain Supply Company, Chicago, Ill.

Dearborn Drug & Chemical Works, Chicago, Ill.

Detroit Trolley & Manufacturing Company, Detroit, Mich.

Doolittle, H. K., Watertown, N. Y.

Dorner Truck & Foundry Company, Logansport, Ind.

Duff Manufacturing Company, Pittsburg, Pa.

Electric Railway Switch Company, Detroit, Mich.

Electric Storage Battery Company, Philadelphia, Pa.

General Electric Company, Schenectady, N. Y.

Globe Ticket Company, Philadelphia, Pa.

Gold Street Car Heating Company, New York, N. Y.

Gould Storage Battery Company, New York, N. Y.

Griffin Wheel Company, Chicago, Ill.

Hale & Kilburn Manufacturing Company, Philadelphia, Pa.

Harrington, C. J., New York, N. Y.

Heywood Brothers & Wakefield Company, Wakefield, Mass.

Hunter Illuminated Car Sign Company, Cincinnati, O.

International Register Company, Chicago, Ill.

Jewett Car Company, Newark, O.

Johns, H. W.-Manville Company, New York, N. Y.

Kalamazoo Railway Supply Company, Kalamazoo, Mich.
Kellogg Switch & Supply Company, Chicago, Ill.
Kinnear Manufacturing Company, Columbus, O.
Knell Air Brake Company, Battle Creek, Mich.
Kuhlman Car Company, G. C., Collingwood, O.

Lancaster, Robert A., Jr., Richmond, Va.
Le Valley Vitae Carbon Brush Company, New York, N. Y.
Lorain Steel Company, Lorain, O.
Ludlow Supply Company, Cleveland, O.
Lumen Bearing Company, Buffalo, N. Y.

Magann Air Brake Company, C. P., Detroit, Mich.
Maltby Lumber Company, Bay City, Mich.
Merritt & Company, Philadelphia, Pa.
Morris Electric Company, New York, N. Y.
McGuire Manufacturing Company, Chicago, Ill.

National Carbon Company, Cleveland, O.
National Lead Company, Pittsburg, Pa.
National Lock Washer Company, Newark, N. J.
Nernst Lamp Company, Pittsburg, Pa.
Newcomb, F. W., Brooklyn, N. Y.
New Haven Car Register Company, New Haven, Conn.
Northern Electric Manufacturing Company, Madison, Wis.
Nuttall Company, R. D., Pittsburg, Pa.

Ohio Brass Company, Mansfield, O.
Ohmer Car Register Company, Dayton, O.

Pantasote Company, New York, N. Y.
Peckham Manufacturing Company, New York, N. Y.
Pennsylvania Steel Company, Philadelphia, Pa.
Pierson, F. B., Detroit, Mich.
Pittsburg Blue Print Company, Pittsburg, Pa.
Pittsburg Reduction Company, Pittsburg, Pa.
Process Copper & Brass Company, Jersey City, N. J.

Reid, Alexander, New York, N. Y.
Reversible Electrical Car Sign Company, Richmond, Va.
Ridlon Company, Frank, Boston, Mass.
Root Track Scraper Company, Kalamazoo, Mich.

Scarritt Car Seat Works, St. Louis, Mo.
Shepard, W. J. & Company, Denver, Colo.
Sherwin-Williams Company, Cleveland, O.
Smith Heating Company, Peter, Detroit, Mich.

Spear Carbon Company, St. Mary's, Pa.
Springfield Manufacturing Company, Bridgeport, Conn.
Squires Automatic Feed Water Controller Co., New York, N. Y.
Standard Paint Co., New York, N. Y.
Standard Pole & Tie Company, New York, N. Y.
Standard Traction Brake Company, New York, N. Y.
Standard Underground Cable Company, Chicago, Ill.
Standard Varnish Works, New York, N. Y.
Stanley Electric Manufacturing Company, Pittsfield, Mass.
Star Brass Works, Kalamazoo, Mich.
Stephenson Company, John, Elizabeth, N. J.
Sterling Lubricator Company, Rochester, N. Y.
Sterling-Meaker Company, Newark, N. J.
St. Louis Register Company, St. Louis, Mo.
Street Railway Journal, New York, N. Y.
Street Railway Review, Chicago, Ill.
Strong, Carlisle & Hammond Company, Cleveland, O.

Taylor Electric Truck Company, Troy, N. Y.
Thomas, Edward G., Boston, Mass.
Tramway & Railway World, London, England.

Union Stop & Signal Company, Fall River, Mass.
United States Steel Company, Boston, Mass.
United States Wood Preserving Company, New York, N. Y.
Universal Sanitary Cuspidor Company, Worcester, Mass.
Van Dorn & Dutton Company, Cleveland, O.
Van Dorn-Elliott Electric Company, Cleveland, O.
Van Dorn Company, W. T., Chicago, Ill.

Weber Railway Joint Manufacturing Company, Chicago, Ill.
Western Electrician, Chicago, Ill.
Westinghouse Air Brake Company, Pittsburg, Pa.
Westinghouse Electric & Manufacturing Company, Pittsburg, Pa.
Wharton, Jr., & Company, Inc., William, Philadelphia, Pa.
Wheel Truing Brake Shoe Company, Detroit, Mich.
Wilmarth & Morton Company, Grand Rapids, Mich.
Wermer Machine Company, C. C., Detroit, Mich.

REPRESENTATIVES OF MANUFACTURERS.

Below are given the names and business connection of the representatives of manufacturers who attended the meeting, as shown by the registers of the Association:

Ackley, Charles S., Sterling-Meaker Co., New York.
Ackerly, Hiram E., American Car Seat Co., Brooklyn.

- Adams, Harry Edwin, W. G. Nagel Electric Co., Toledo.
Ahearn, Thomas, Westinghouse Electric & Mfg. Co., Ottawa.
Alden, Charles A., Pennsylvania Steel Co., Steelton, Pa.
Alexander, Charles, Mechanical Boiler Cleaner Co., Providence.
Alexander, C. H., Loos & Dilworth, Philadelphia.
Alford, W. H., Ohmer Car Register Co., Dayton, O.
Allen, O. Percy, Wheel Truing Brake Shoe Co., Detroit.
Allen, E. T., Cleveland Frog and Crossing Co., Cleveland.
Allison, Giles S., New York.
Alper, Nathan, Great Western Smelting and Refining Co., Chicago.
Amtz, William C., Pennsylvania Steel Co., Philadelphia.
Anderson, Arthur A., Standard Underground Cable Co., Pittsburg.
Anderson, Alexander S., Adams & Westlake Co., Chicago.
Angerer, Victor S., William Wharton, Jr., & Co., Inc., Philadelphia.
Anthony, Francis G., New Haven Car Register Co., New Haven.
Anthony, Willis M., New Haven Car Register Co., New Haven.
Archer, J. Warren, Rossiter, MacGovern & Co., New York.
Armstrong, A. H., General Electric Co., Schenectady, N. Y.
Armstrong, J. H. American Machinery Co., Grand Rapids, Mich.
Armstrong, William A., Jr., Mayer & Englund Co., Philadelphia.
Arnell, Chris., Knell Air Brake Co., Pontiac, Mich.
Arnold, Ward S., Stanley Electric Mfg. Co., Chicago.
Ashton, E. Percy, Michigan Electric Co., Detroit.
Atkin, Godfrey H., Electric Storage Battery Co., Chicago.
Atkinson, J. M., J. M. Atkinson Co., Chicago.
Avery, A., American Union Electric Co., New York.
Avery, F. E., Motor Truck and Vehicle Co., Columbus, O.
Ayres, H. C., Michigan Electric Co., Detroit.
- Bailey, Theodore P., General Electric Co., Chicago.
Baily, George C., John A. Roebling's Sons Co., Chicago.
Baird, Charles C., H. B. Camp Co., New York.
Baker, Walter H., National Lead Co., St. Louis.
Ballard, A. W., General Electric Co., Portland, Ore.
Balon, Andrew, John Stephenson Co., Elizabeth, N. J.
Barce, S. B., Triumph Electric Co., Detroit.
Barnard, Bleecker S., Standard Vitrified Conduit Co., New York.
Barnard, J. B., Standard Vitrified Conduit Co., New York.
Baron, George, U. S. Steel Co., Everett, Mass.
Barr, B. M., Continuous Rail Joint Co., Newark, N. J.
Barr, James C., Weber Railway Joint Mfg. Co., New York.
Barry, C. E., General Electric Co., Schenectady, N. Y.
Barry, J. G., General Electric Co., Schenectady.
Barthal, Oliver E., Mechanical Engineer, Detroit.
Bates, C. F., National Ticket Co., Cleveland.

Bates, Putnam A., Crocker-Wheeler Co., Ampere, N. J.
Battin, C. H., Tennis Co. Cincinnati.
Baxter, M., Westinghouse Electric and Mfg. Co., Pittsburg.
Beach, H. E., New Haven Car Register Co., New Haven.
Beach, Fred W., Bassett-Presley Co., Cleveland.
Beach, R. H., General Electric Co., New York.
Beauchin, N. J., Universal Sanitary Cuspidor Co., Worcester.
Becker, G. F., H. W. Johns-Manville Co., Milwaukee.
Beckman, B. C., Standard Paint, Co., Chicago.
Beebe, Robert C., Pneumatic Railway Equipment Co., Cleveland.
Belknap, R. E., Pennsylvania Steel Co., Chicago.
Berg, Nicholas, Automatic Car Brake Co., Utica.
Bergenthal, V. W., Stanley Electric Mfg. Co., Chicago.
Bergmann, William, John Stephenson Co., Elizabeth, N. J.
Berry, A. Hall, Lovell Co., New York.
Berry, Bertram, Heywood Bros. & Wakefield Co., New York.
Berry, W. S., American Electric Switch Co., Pittsburg.
Beylard, L. D., National Conduit and Cable Co., Philadelphia.
Bibbins, J. R., Westinghouse Companies, New York.
Bigelow, George S., Chicago Varnish Co., Chicago.
Bigelow, H. T., Hale & Kilburn Mfg. Co., Chicago.
Biggs, P. H., Wormer Machinery Co., Detroit.
Billheimer, F. B., Kinnear Mfg. Co., Columbus, O.
Black, F. B., Ohio Brass Co., Mansfield, O.
Blair, John F., Engineer, Detroit.
Blanchard, Edward S., Sherwin-Williams Co., Cleveland.
Bland, Robert, Christensen Engineering, Milwaukee.
Blewitt, Scott H., American Car and Foundry Co., St. Louis.
Blizard, Charles, Electric Storage Battery Co., Philadelphia.
Blumenthal, H. S., Detroit Trolley and Mfg. Co., Detroit.
Bogue, W. C., American Steel & Wire Co., Chicago.
Bolles, Frank G., Bullock Electric Mfg. Co., Cincinnati.
Bowman, W. P., John A. Roebling Son's Co., Cleveland.
Boyd, F. C., New Haven Car Register Co., New Haven.
Boyd, P. M., Lorain Steel Co., Lorain, O.
Boyer, F. N., General Electric Co., Chicago.
Boyer, S. B., Domer Truck and Foundry Co., Logansport, Ind.
Braden, N. S., Westinghouse Electric and Mfg. Co., Cleveland.
Bradfield, H. S., American Brake Shoe and Foundry Co., Buffalo.
Brady, Daniel M., Brady Brass Co., New York.
Brady, Paul T., Westinghouse Electric and Mfg. Co., Syracuse.
Bragg, C. A., Westinghouse Electric and Mfg. Co., Philadelphia.
Braine, L. F., Continuous Rail Joint Co., Newark, N. J.
Brandau, Charles, Automatic Car Brake Co., Utica.

- Brandau, John, Automatic Car Brake Co., Utica.
Breidenbach, William F., Ohmer Car Register Co., Dayton, O.
Brennan, D. M., Edison Illuminating Co., Detroit.
Brett, J. A., Electrical Installation Co., Chicago.
Brewer, Williard, Knell Air Brake Co., Battle Creek.
Brill, J. Ellwood, J. G. Brill Co., Philadelphia.
Brislin, A. J., Standard Traction Brake Co., New York.
Brown, Benson E., Acme White Lead and Color Works, Detroit.
Brown, Charles, Hunter Illuminated Car Sign Co., Cincinnati.
Brown, H. N., Globe Ticket Co., Philadelphia.
Brown, Harold P., New York.
Brown, R. S., Westinghouse Electric and Mfg. Co., Boston.
Brown, William H., International Register Co., Chicago.
Budd, James H., Lorain Steel Co., Lorain, O.
Buddecke, William A., H. W. Johns-Manville Co., St. Louis.
Buehler, J. G., Columbia Machine Works, Brooklyn.
Bullock, Edward, Michigan Electric Co., Detroit.
Bunce, J., Knell Air Brake Co., Battle Creek.
Bunting, W., Ohio Brass Co., Mansfield, O.
Burch, Edward P., Consulting Engineer, Minneapolis.
Burke, E., Automatic Stoker Co., Detroit.
Burg, W. A., Ohio Brass Co., Chicago.
Burt, L. M., Pittsburg Reduction Co., Pittsburg.
Bushnell, W. E., Kalamazoo Railway Supply Co., Kalamazoo.
Butterfield, J. L., St. Louis Car Wheel Co., St. Louis.
- Calisch, J. C., General Electric Co., Buffalo.
Cameron, H. F. de B., Electric Storage Battery Co., Detroit.
Camp, H. H., H. B. Camp Co., Akron, O.
Campbell, D. A., Columbia Refining Co., New York.
Campbell, A. N., Columbia Refining Co., New York.
Carey, Thomas F., John Stephenson Co., Boston.
Carey, W. Gibson, General Electric Co., Schenectady.
Carleton, W. M., Nernst Lamp Co., Pittsburg.
Carr, Robert F., Dearborn Drug & Chemical Co., Chicago.
Carr, W. Frank, Falk Co., Milwaukee.
Carson, J. H., Sterling-Meaker Co., New York.
Carter, S. P., Merritt & Co., Philadelphia.
Case, Charles L., Under-Feed Stoker Co., Chicago.
Case, F. E., General Electric Co., Schenectady.
Chamberlin, E. G., Standard Pole and Tie Co., New York.
Chapin, Edward H., Rochester Car Wheel Works, Rochester.
Chappell, C. C., Westinghouse, Church, Kerr & Co., Chicago.
Chase, E. D., Root Track Scraper Co., Kalamazoo, Mich.
Chase, T. F., Ohio Brass Co., Toronto, O.

Chandler, George, American Steel & Wire Co., Dayton, O.
Cheney, H. N., Westinghouse Electric and Mfg. Co., Pittsburg.
Christensen, N. A., Christensen Engineering Co., Milwaukee.
Chur, Walter, American Railway Supply Co., New York.
Clark, Charles S., Pennsylvania Steel Co., Boston.
Clark, Frank H., Helios-Upton Co., Chicago.
Clarke, Iverson Brooks, Standard Traction Brake Co., Pittsburg.
Clarke, J. M., Continuous Rail Joint Co., New York.
Clarke, J. V., Le Valley Vitae Carbon Brush Co., New York.
Clitz, Randolph, Lorain Steel Co., Lorain, O.
Coakley, F. J., Samson Cordage Works, Boston.
Cobb, C. W., Western Electric Co., Cleveland.
Cobb, G. W., Boston Woven Hose and Rubber Co., Detroit.
Cobert, Frank, Christensen Engineering Co., Detroit.
Cockey, Marston, John A. Roebling's Sons Co., New York.
Cockley, W. A., Mayer & Englund Co., New York.
Colby, Safford K., Pittsburg Reduction Co., Pittsburg.
Coleman, Charles E., Eugene Munsell & Co., Chicago.
Conant, R. W., Testing Instruments, Cambridge, Mass.
Conger, Chilion P., MacPherson Switch and Frog Co., Niagara Falls.
Conover, A. B., John A. Roebling's Sons Co., Chicago.
Conway, Peter, Maltby Lumber Co., Detroit.
Cooke, W. J., McGuire Mfg. Co., Chicago.
Cookson, T. J., Steam Water Purification, Cincinnati.
Cooper, H. S., Electrical Engineering and Development Co., New York.
Coote, J. Maxwell, Harold P. Brown, New York.
Corey, F. B., General Electric Co., Schenectady.
Cottrell, J. P., Electric Railway Switch Co., Detroit.
Cransheur, J. B., Electric Railway Equipment Co., Cincinnati.
Cranston, J. S., General Electric Co., Los Angeles, Cal.
Crockett, L. M., Star Brass Works, Kalamazoo, Mich.
Crockett, W. P., Hart Mfg. Co., Chicago.
Crouse, J. L., Westinghouse Electric and Mfg. Co., New York.
Cummins, William, Standard Traction Brake Co., Cincinnati.
Cunningham, J. T., Christensen Engineering Co., Milwaukee.
Curtis, C. G., General Electric Co., Philadelphia.
Cutter, George, George Cutter Co., Chicago.

Dalby, A. B., General Supply Co., New York.
Dailey, S. H., Harold P. Brown, New York.
Dalley, A. H. Charles, Under-Feed Stoker Co., Chicago.
Dalton, P. J., Continuous Rail Joint Co., Troy.
Davis, Arthur V., Pittsburg Reduction Co., Pittsburg.
Davis, C. H., Trenton Tower Automobile, Columbus, O.
Davis, H. P., Westinghouse Electric and Mfg. Co., Pittsburg.

- Davis, Thomas, Westinghouse Electric and Mfg. Co., Pittsburg.
Davis, W. J., General Electric Co., Schenectady.
Davis, Jr., W. J., General Electric Co., Schenectady.
Dawson, J. A., Street Railway Supplies, Montreal.
Dean, D. B., J. G. Brill Co., Philadelphia.
De Gress, Francis B., Crocker-Wheeler Co., New York.
Denton, J. H., Christensen Engineering Co., New York.
De Remer, W. L., Spencer Otis Co., Chicago.
De Steese, H., Stuart-Howland Co., Boston.
Devers, L. R., Automatic Track Switch, Mummaville, O.
Dewson, E. H., Standard Traction Brake Co., Pittsburg.
Dickson, F., F. H. Newcomb, Brooklyn.
Dittrick, A. R., Brake Shoe Mfg. Co., Chicago.
Dixon, Jr., Joseph F., Christensen Engineering Co., New York.
Dodd, Samuel T., Stanley Electric Mfg. Co., Pittsfield, Mass.
Dodd, William C., National Lock Washer Co., Newark, N. J.
Dolph, John C., Standard Varnish Works, New York.
Donaldson, William W., Gould Storage Battery Co., New York.
Doniker, H. C., Giles S. Allison, New York.
Doolittle, H. K., Car Windows, Watertown, N. Y.
Dorner, H. A., Dorner Truck and Foundry Co., Logansport, Ind.
Dow, Alex, Edison Illuminating Co., Detroit.
Doyle, H. S., Western Electric Supply Co., St. Louis.
Doyle, W. L., John A. Roebling's Sons Co., Trenton.
Draffen, E. L., Gould Storage Battery Co., Chicago.
Drake, F. S., Westinghouse Electric and Mfg. Co., New York.
Driffield, S. R., Brake Shoe Mfg. Co., Chicago.
Dryer, Irvin, Westinghouse Electric and Mfg. Co., Chicago.
Drysdale, Thomas, Edison Illuminating Co., Detroit.
Duncan, J. McA., Westinghouse Electric and Mfg. Co., Pittsburg.
Dusinberre, George B., Westinghouse Electric and Mfg. Co., Pittsburg.
Dutton, W. A., Van Dorn and Dutton Co., Cleveland.

Easterbrook, J. S., Westinghouse Electric and Mfg. Co., Pittsburg.
Eckert, S. H., National Conduit and Cable Co., New York.
Egan, S. P., J. A. Fay & Egan Co., Cincinnati.
Eldred, Jr., John E., Christensen Engineering Co., Milwaukee.
Ellicott, Charles Remington, Standard Traction Brake Co., New York.
Ellicott, J. R., Standard Traction Brake Co., New York.
Elliott, J. N., Van Dorn & Elliott Electric Co., Cleveland.
Elliott, W. H., Elliott Bros. Electric Co., Cleveland.
Ellis, Clifford J., Pennsylvania Steel Co., Chicago.
Ellis, S. P. S., Lorain Steel Co., Pittsburg.
Elmquist, F. A., Sherwin-Williams Co., Cleveland.
Embick, John B., Wendell & MacDuffie, New York.

- Entwisle, E. B., Lorain Steel Co., Johnstown, Pa.
Estep, Frank A., R. D. Nuttall Co., Pittsburg.
Evans, D. J., Lorain Steel Co., Chicago.
Evans, H. C., Lorain Steel Co., New York.
Ewing, George C., Nernst Lamp Co., Boston.
Eyre, M. K., Buckeye Electric Co., Cleveland.
- Faber, E. S., General Electric Co., New York.
Falk, Otto H., Falk Co., Milwaukee.
Fasquelle, L. J., Sherwin-Williams Co., Cleveland.
Fellows, J. William, Boston Woven Hose and Rubber Co., Cambridge, Mass.
- Field, E. R., Western Electric Co., Detroit.
Field, H. G., Field & Hinchman, Detroit.
Finney, S. H., H. W. Johns-Manville Co., Chicago.
Fitzgerald, A., Roe Stephens Mfg. Co., Detroit.
Fleming, A. E., Nernst Lamp Co., Pittsburg.
Floyd, Walter J., Nernst Lamp Co., New York.
Fluegel, Otto L., Dearborn Drug & Chemical Works, Detroit.
Foote, O. A., Van Dorn-Elliott Electric Co., Cleveland.
Forde, Bert, Crocker-Wheeler Co., Chicago.
Foster, James A., Adams & Westlake Co., Philadelphia.
Forsyth, W. H., Curtain Supply Co., Chicago.
Fountain, Jr., J., American Union Electric Co., New York.
Franklin, Wallace, Westinghouse, Church, Kerr & Co., Detroit.
Fraser, J. William, Electric Storage Battery Co., Philadelphia.
Freed, George F., Duff Mfg. Co., Pittsburg.
Freeman, C. K., Armspear Mfg. Co., Chicago.
Frenyear, T. C., Westinghouse Electric and Mfg. Co., Buffalo.
Frost, Harry W., Berry Bros., Ltd., Detroit.
Fry, Emmet M., Lorain Steel Co., Chicago.
Funsten, F. H., Phelps Co., Detroit.
- Gage, B. O., United States Steel Co., Everitt, Mass.
Gale, F. H., General Electric Co., Schenectady.
Gallagher, J. M., Mayer & Englund Co., Philadelphia.
Gardner, W. C., Jewett Car Co., Newark, O.
Gardner, W. W., American Brake Shoe and Foundry Co., New York.
Garland, N. W., Ohio Brass Co., New York.
Garton, W. R., W. R. Garton Co., Chicago.
Gaviston, W. O., Columbia Incandescent Lamp Co., St. Louis.
Gavitt, J. E., Federal Supply Co., Chicago.
Gaylord, T. P., Westinghouse Electric and Mfg. Co., Chicago.
Gemunder, Arthur, American Brake Shoe and Foundry Co., Columbus, Ohio.

- Gellatly, Burt, Ohio Brass Co., Pittsburg.
Gibson, Robert, Blue Print Paper and Mfg. Co., Pittsburg.
Gibbs, H. W., William Hall & Co., Boston.
Goble, W. H., Christensen Engineering Co., New York.
Gold, Edward E., Gold Car Heating and Lighting Co., New York.
Goldey, Paul R., Ar-Co Circuit Breaker Co., Philadelphia.
Goodby, Alfred, Westinghouse Electric and Mfg. Co., Pittsburg.
Gordon, J. R., Westinghouse Electric and Mfg. Co., Atlanta.
Gowing, J. Parker, Pratt & Lambert, Chicago.
Grace, Edward S., Wheeler Condenser and Engineering Co., Chicago.
Grace, J. C., G. P. McGann Air Brake Co., Toronto.
Gray, W. H., Townsend, Reed & Co., Indianapolis.
Green, Charles, Knell Air Brake Co., Battle Creek.
Green, F. C., Consolidated Car Heating Co., Albany.
Green, Frederick P., Standard Traction Brake Co., New York.
Grier, Thomas Graham, American Circular Loom Co., Chicago.
Griffin, J. M., Wheel Truing Brake Shoe Co., Detroit.
Griffith, Rush E., J. G. Brill Co., Philadelphia.
Griffiths, De Witt Clinton, Globe Ticket Co., Philadelphia.
- Haines, Fred W., Triumph Electric Co., Cincinnati.
Haines, W. L., Consolidated Car Fender Co., New York.
Hall, F. B., International Register Co., Chicago.
Hamilton, C. M., F. Bissell Co., Toledo.
Hamilton, G. W., Burnham, Williams & Co., Philadelphia.
Hamlin, J. S., U. S. Steel Co., Everett, Mass.
Hammond, E. H., American Electrical Works, Chicago.
Hammond, Samuel F., Pa. Electric and Railway Supply Co., Pittsburg.
Hammond, Jr., W. S., Consolidated Car Heating Co., Albany.
Hanna, J. A., Electric Railway Supplies, Cleveland.
Hanson, Clifford Taft, Bethlehem Steel Co., So. Bethlehem, Pa.
Harpell, W. S., Griffin Wheel Co., Chicago.
Harper, R. H., Western Electric Co., Philadelphia.
Harrington, C. J., Rail Bonds, New York.
Harris, C. M., Pittsburg Reduction Co., Pittsburg.
Harris, S., American Union Electrical Co., New York.
Hart, H. H., Hart Tie Plate, Chicago.
Hart, O. W., Union Stop and Signal Co., Fall River, Mass.
Harting, W. J., American Electric Co., Detroit.
Hartwell, Arthur, Westinghouse Electric and Mfg. Co., Pittsburg.
Hartwig, W. J., Crocker-Wheeler Co., Detroit.
Harwood, G. A., Ohio Brass Co., Mansfield, O.
Harvey, James, Springfield Mfg. Co., Bridgeport, Conn.
Harvey, Leroy M., Northern Electrical Mfg. Co., Chicago.
Haskell, George M., J. G. Brill Co., Philadelphia.

Hastings, George S., George S. Hastings & Co., Cleveland.
Hatch, Edward B., H. W. Johns-Manville Co., Hartford, Conn.
Hatch, F. E., Hatch Electric Co., Green Bay, Wis.
Hawkins, George B., Christensen Engineering Co., New York.
Hawley, Cornell S., Consolidated Car Heating Co., New York.
Hayes, J. M., New Haven Car Register Co., New Haven, Conn.
Heil, J., Heil Rail Joint Welding Co., Milwaukee, Wis.
Heller, H. W., Heller Mfg. Co., Pottstown, Pa.
Henderson, James, Harold P. Brown, New York.
Henry, Fred, Heywood Bros. & Wakefield Co., Wakefield, Mass.
Henry, O. D., Lorain Steel Co., Johnstown, Pa.
Herrick, Albert B., Gould Storage Battery Co., New York.
Heulings, Jr., W. H., J. G. Brill Co., Philadelphia.
High, John M., Pantasote Co., New York.
Hilchings, F. W., Allen & Morrison Brake Shoe & Mfg. Co., Chicago.
Hilton, A. A., Ft. Wayne Foundry and Machine Co., Chicago.
Hinman, Walter, Ohmer Fare Register Co., Dayton, O.
Hinman, W. E., Ohmer Fare Register Co., Dayton, O.
Hoadley, George M., Bemis Car Truck Co., New York.
Hocker, H. L., Lorain Steel Co., Lorain, O.
Hodges, Percy, Pittsburg Reduction Co., Boston.
Hogan, James, Michigan Electric Co., Detroit.
Hollingsworth, George, Consolidated Car Fender Co., New York.
Holloway, H. C., Weber Railway Joint Mfg. Co., Chicago.
Hollowood, James, Harold P. Brown, New York.
Hoit, Lehman B., Bullock Electric Mfg. Co., Cleveland.
Holmes, B. P., New York City Railway Claim Bureau, New York.
Hoopes, William, Pittsburg Reduction Co., Pittsburg.
Hopkins, Joel C., Knell Air Brake Co., Battle Creek.
Hopkins, Jr., W. A., Motor Truck and Vehicle Co., Columbus, O.
Horan, J. B., National Conduit and Cable Co., New York.
Hotchkiss, E., Wheel Truing Brake Shoe Co., Pittsfield, Mass.
Hough, Benjamin Kent, Stanley Electric Mfg. Co., Pittsfield, Mass.
Hough, C. D., General Electric Co., Aurora, Ill.
Hover, P. M., Ohio Brass Co., Mansfield, O.
Howard, F. K., Chicago Equipment Co., Chicago.
Howard, George E., Scarritt Car Seat Works, St. Louis.
Howell, Thomas Paul, Kuhlman Car Co., Cleveland.
Hopewell, T. B., L. C. Chase & Co., Boston.
Humphrey, C. B., Westinghouse Electric and Mfg. Co., Cincinnati.
Hunter, Lytle J., Hunter Illuminated Car Sign Co., Cincinnati.
Hurd, G. A., Crane Co., Chicago.
Hutchins, S. D., Westinghouse Air Brake Co., Columbus, O.
Hutchinson, F. L., Christensen Engineering Co., Milwaukee.

Irwin, C. E., J. G. Miller Railway Supply Co., St. Louis.

Jackman, George W., Springfield Mfg. Co., Bridgeport, Conn.

Jacob, George H., Seidler-Miner Electric Co., Detroit.

James, J. C., Christensen Engineering Co., Milwaukee.

Janson, Louis, American Car Seat Co., Brooklyn.

Jenkins, B. B., Jenkins' Sander, Toronto, Ont.

Johnson, Alfred, Reliable Trolley Harp, Quincy, Ill.

Johnson, A. J., Federal Mfg. Co., Cleveland.

Johnson, Charles F., Railway Equipment, Buffalo.

Johnson, Claude, Creaghead Engineering Co., Cincinnati.

Johnson, O. W., Johnson Wrecking Frog Co., Cleveland.

Johnston, A. R., Clarence Brooks & Co., Newark, N. J.

Jones, Arthur E., National Lead Co., Cincinnati.

Jones, B. J., Sargent & Lundy, Chicago.

Junkins, S. A., Westinghouse, Church, Kerr & Co., Boston.

Junkins, S. E., Westinghouse, Church, Kerr & Co., Boston.

Kalas, Anthony T., Q. & C. Co., Chicago.

Keegan, T. E., Detroit Automatic Stoker Co., Detroit.

Kemp, H. S., Reversible Electric Car Sign Co., Richmond, Va.

Kennedy, F. B., New Haven Car Register Co., New Haven, Conn.

Kent, R. B., Atlas Railway Supply Co., Chicago.

Kerschner, W. R., Columbia Machine Works, Brooklyn.

Kerr, H. H., Westinghouse, Church, Kerr & Co., Chicago.

Keyes, F. A., American Steel & Wire Co., New York.

Kier, S. W., Westinghouse Electric and Mfg. Co., Pittsburg.

Kimball, Herman P., Standard Underground Cable Co., New York.

Kimble, R. L., Central Electric Co., Chicago.

King, Alvin S., Sterling Varnish Co., Pittsburg.

King, C. K., Ohio Brass Co., Mansfield, O.

King, C. P., Brady Brass Co., Jersey City.

King, Charles P., Valee Supply Co., Philadelphia.

Kingston, William W., Lorain Steel Co., Atlanta.

Kinsman, F. E., Kinsman Electric and Railway Supply Co., New York.

Kirkland, James L., American Circular Loom Co., New York.

Kirkpatrick, E. F., McRoy Clay Works, Brazil, Ind.

Klauder, R. H., Electric Storage Battery Co., St. Louis.

Kleinschmidt, H. F. A., Lorain Steel Co., Johnstown, Pa.

Krauff, E. J., Powell & Turner Truck Co., Troy.

Knickerbocker, C. K., Griffin Wheel Co., Chicago.

Knight, Charles D., Christensen Engineering Co., Milwaukee.

Knight, Jr., C. S., American Steel Wire Co., Chicago.

Korst, Albert, Union Mica Co., New York.

Krauschaar, C. F., Krauschaar Lamp and Reflector Co., St. Louis.

- Kuhlman, G. C., G. C. Kuhlman Car Co., Cleveland.
Kuhn, Frank, United Electric Heating Co., Detroit.
Kuhn, Koburt, United Electric Heating Co., Detroit.
- Laichinger, John H., American Electric Co., Detroit.
Lambe, A. B., Canadian General Electric Co., Toronto, Ont.
Lancaster, Jr., R. H., Reversible Electric Car Sign Co., Richmond, Va.
Lane, Nat P., Parrott Varnish Co., Philadelphia.
Lannius, B. G., Westinghouse Electric and Mfg. Co., Pittsburg.
Lawless, E. J., John Stephenson Co., Elizabeth, N. J.
Lawrie, Alvah K., Pittsburg Reduction Co., Pittsburg.
Leach, P. J., American Brake Shoe and Foundry Co., Detroit.
Lewis, Frank J., Victor Electrical Co., Cleveland.
Lewis, Wilbur, Westinghouse Electric and Mfg. Co., New York.
Leidenger, Joseph, Dayton Mfg. Co., Dayton, O.
Leidenger, Peter, Dayton Mfg. Co., Dayton, O.
Lewis, W. H., Curtain Supply Co., Chicago.
Lillibridge, Ray D., Stanley Electric Mfg. Co., New York.
Lincoln, P. M., Westinghouse Electric and Mfg. Co., Pittsburg.
Lindsay, Ellwood C., Baldwin Locomotive Works, Philadelphia.
Lintern, William, Nichols-Lintern Co., Cleveland.
Littlefield, A. S., Lorain Steel Co., Chicago.
Livsey, J. H., General Electric Co., Detroit.
Lockwood, Joseph E., Michigan Electric Co., Detroit.
Lovejoy, F. H., Strong, Carlisle & Hammond Co., Cleveland.
Lovejoy, J. R., General Electric Co., Schenectady.
Lucas, George C., Cleveland Frog and Crossing Co., Cleveland.
Lucas, J., Cleveland Frog and Crossing Co., Cleveland.
Ludlow, James B., Ludlow Supply Co., Cleveland.
Lyons, James W., Allis-Chalmers Co., Chicago.
- MacFadden, J. P., General Electric Co., Schenectady.
MacGovern, Frank, Rossiter, MacGovern & Co., New York.
McCarthy, James B., Public Lighting Commission, Detroit.
McClintock, O. N., Bellamy Vestlette Mfg. Co., Cleveland.
McCormack, E. D., Canadian General Electric Co., Toronto, Ont.
McCormack, W. G., Ohio Brass Co., Toronto, Ont.
McCowen, J. H., Lorain Steel Co., Lorain, O.
McCoy, Frank, St. Louis Car Co., Pittsburg.
McDonald, M. J., J. R. McCardell & Co., Trenton.
McDonald, William F., Automatic Heating Co., Detroit.
McDonald, W. S., Detroit Trolley and Mfg. Co., Detroit.
McEwan, J., Powell Truck Co., Troy.
McGaven, John C., Seidler-Miner Electric Co., Detroit.
McGough, S. P., Continuous Rail Joint Co., Chicago.

- McGill, J. H., Standard Railway Materials Co., Chicago.
McGivley, Thomas A., Duff Mfg. Co., Pittsburg.
McGuire, W. A., McGuire Mfg. Co., Chicago.
McIntosh, George W., A. E. Holaday Mfg. Co., New Haven, Conn.
McKinlock, Walter C., Chicago.
McLean, E. B., Sterling-Meaker Co., New York.
McMichael, J. G., Atlas Railway Supply Co., Chicago.
McQuale, Jr., John A., American Steel & Wire Co., Philadelphia.
McQueen, W. J., Gold Street Car Heating Co., New York.
McQuiston, J. C., Westinghouse Companies, Pittsburg.
McVicker, William B., Dearborn Drug and Chemical Works, New York.
Macdonald, M., Ohmer Fare Register Co., Cleveland.
Mackenzie, John, Johnson Wrecking and Frog Co., Cleveland.
Madill, Thomas, Sherwin-Williams Co., Chicago.
Magann, G. P., G. P. Magann Air Brake Co., Toronto, Ont.
Mahony, J. J., General Electric Co., New York.
Main, Charles, Magann Air Brake Co., Detroit.
Maltby, A., Maltby Lumber Co., Bay City, Mich.
Maltby, Irving A., Maltby Lumber Co., Bay City, Mich.
Manson, Ray H., Kellogg Switchboard and Supply Co., Chicago.
Markall, W. B., Markall Electric Co., Washington, D. C.
Markham, F. L., George S. Hastings & Co., Cleveland.
Marks, Albert G., National Lead Co., Detroit.
Marks, Frank R., Metal Sales Co., Cleveland.
Marks, Walter F., National Lead Co., Detroit.
Marsh, H. C., Westinghouse Electric and Mfg. Co., Cincinnati.
Martin, C. W., Consolidated Car Heating Co., Chicago.
Martin, F. L., Kellogg Switchboard and Supply Co., Chicago.
Marymont, David J., Detroit Trolley and Mfg. Co., Detroit.
Mason, Frederick H., Feed Water Purification, Detroit.
Mason, J. F., Ohio Brass Co., Chicago.
Mason, W. H., Dallett & Co., Philadelphia.
Mason, W. R., Mechanical Boiler Cleaner Co., Chicago.
Masterson, Frank D., Chase-Shawmut Co., Boston.
Maycock, J., Pratt & Lambert, New York.
Mayhew, Judson T., Northern Electric Co., Detroit.
Mayo, William B., Hooven, Owens & Rentschler Co., New York.
Mead, George A., Ohio Brass Co., Mansfield, O.
Medbury, C. F., Westinghouse, Church, Kerr & Co., Detroit.
Meech, C. E., Wilmarth & Mormon Co., Grand Rapids, Mich.
Medbury, Charles F., Westinghouse Electric and Mfg. Co., Detroit.
Meek, J. E., H. W. Johns-Manville Co., New York.
Mellon, William R., Murphy Varnish Co., Chicago.
Meeten, Wesley, Wallace Supply Co., New York.

- Meinema, A., W. B. Austin & Co., Chicago.
Metzger, William E., Wheel Truing Brake Shoe Co., Detroit.
Merrick, Frank Anderson, Westinghouse Electric and Mfg. Co., Johnstown.
Merrill, J. J., Chall Water Tube Boilers, Chicago.
Merritt, Fred L., Standard Pole and Line Co., New York.
Metterhausen, C., Wallace Supply Co., Chicago.
Metzelaar, Anthony, Knell Air Brake Co., Battle Creek.
Mickey, R. K., National Carbon Co., Cleveland.
Miller, C. S., United States Steel Co., Everett, Mass.
Miller, D. N., Miller Sanding Machine, Hamilton, Ont.
Miller, Frank, C. J. Harrington, New York.
Miller, J. G., Pennsylvania Steel Co., St. Louis.
Miller, J. H., Continuous Rail Joint Co., St. Louis.
Milloy, Peter D., International Trolley Controller Co., Buffalo.
Miner, F. J., Seidler-Miner Electric Co., Detroit.
Moloney, J. J., General Electric Co., New York.
Moore, Miles F., Morden Frog and Crossing Works, Chicago.
Moore, R. E., General Electric Co., Philadelphia.
Moran, William M., Townsend, Reed & Co., Indianapolis.
Morrell, Frank A., Fowler & Robert Mfg. Co., Brooklyn.
Morris, Elmer P., American Union Electric Co., New York.
Morrison, James, G. P. Magann Air Brake Co., Detroit.
Morrow, George L. K., Detroit Automatic Stoker Co., Detroit.
Morse, George C., Rochester Car Wheel Works, Taunton, Mass.
Morton, E. H., Westinghouse Electric and Mfg. Co., Detroit.
Mueller, Ralph S., Sawyer-Man Electric Co., New York.
Mulford, William W., American Telephone and Telegraph Co., New York.
Mullin, E. H., General Electric Co., New York.
Munoz, S. C., Munoz Boiler Co., New York.
Murphy, Andrew J., Baldwin Locomotive Works, Philadelphia.
Nate, J. J., Sternberg-Carlson Co.
Neall, N. J., Westinghouse Electric and Mfg. Co., Pittsburg.
Nef, J. J., Christensen Engineering Co., New York.
Nellis, George A., Sawyer-Man Electric Co., Pittsburg.
Nethercut, Edgar S., Paige Iron Works, Chicago.
Nute, John W., St. Louis Car Wheel Works, St. Louis.
Nutter, Alonzo E., United States Curtain Co., Newark, N. J.
Nevins, C. M., C. J. Harrington, New York.
Newbury, W. A., Westinghouse Electric and Mfg. Co., Wilmington, Del.
Neuell, Frank C., Westinghouse Electric and Mfg. Co., Pittsburg.
Newcomb, F. H., Uniform Caps, Brooklyn.

- Newell, F. C., Westinghouse Air Brake Co., Pittsburg.
Newhall, E. G., Newhall & Co., Detroit.
Newton, D. M., American Electric Co., Detroit.
Nicol, C. E., Armspear Mfg. Co., New York.
Noe, C. E., General Electric Co., Chicago.
Noyes, Ernest High, Pittsburg Reduction Co., Pittsburg.
- Oakley, William E., Worcester Steel Foundry Co., Worcester, Mass.
Oatman, D. P., Nernst Lamp Co., Pittsburg.
Odena, Jr., Fred. M., Buckeye Electric Co., Cleveland.
Ohmer, John F., Ohmer Fare Register Co., Dayton, O.
Oliver, J. W., American Machinery Co., Grand Rapids, Mich.
Osborne, L. A., Westinghouse Electric and Mfg. Co., Pittsburg.
Overstreet, H. E., Climax Stock Guard Co., Chicago.
- Packer, E., American Union Electric Co., New York.
Paetzker, E. J., American Steel & Wire Co., Chicago.
Paine, F. B. H., Westinghouse Electric and Mfg. Co., New York.
Paradis, Ernest J., W. G. Nagel Electric Co., Toledo.
Parker, W. E., Westinghouse Electric and Mfg. Co., Buffalo.
Parmelee, George H., Lorain Steel Co., Johnstown, Pa.
Parmenter, George A., Life Guards, Cambridge, Mass.
Parshall, L. A., Ball & Wood Co., Detroit.
Parsons, R. P., Pennsylvania Steel Co., Chicago.
Partridge, Arthur S., Street Railway Supplies, St. Louis.
Partridge, James, Partridge Carbon Works, Sandusky, O.
Pashby, B. F., Potts' Trolley Wheel Co., Detroit.
Patch, N. K. B., Lumen Bearing Co., Buffalo.
Patenall, T. H., Union Switch and Signal Co., Swissvale, Pa.
Patterson, E. B., Bassett-Presley Co., Cleveland.
Paulson, Niel, Jewett Car Co., Newark, O.
Payne, A. E., Creaghead Engineering Co., Cincinnati.
Peck, H., Wheel Truing Brake Shoe Co., Detroit.
Peirce, Edward B., American Track Barrow, Lowell, Mass.
Peirce, J. A., Rossiter, McGovern & Co., St. Louis.
Pell, D. W., George S. Hastings & Co., Lima, O.
Pendleton, D. D., Westinghouse Electric and Mfg. Co., Pittsburg.
Perrault, Jesse D., Detroit.
Perrine, F. A. C., Stanley Electric Mfg. Co., Pittsfield, Mass.
Perry, David H., G. C. Kuhlman Car Co., Cleveland.
Perry, James W., H. W. Johns-Manville Co., New York.
Peterson, E. H., General Electric Co., Detroit.
Pevear, J. B., General Electric Co., Cincinnati.
Phelps, Neil S., Knell Air Brake Co., Battle Creek.
Phelps, William J., Phelps Co., Detroit.

- Phelps, William Edwin, Phelps Co., Detroit.
Phillips, E. F., Edison Illuminating Co., Detroit.
Pierce, C. C., General Electric Co., Boston.
Pierce, R. H., Pierce, Richardson & Neiler, Chicago.
Pierson, F. B., National Lead Co., Detroit.
Pomeroy, L. R., General Electric Co., New York.
Pope, W. C., Globe Ticket Co., Philadelphia.
Poppenhusen, P. Albert, Green Engineering Co., Chicago.
Porter, J. Y., Porter Derailing Switches, Cleveland.
Porter, W., Ohio Brass Co., Chicago.
Porter, William M., Alphaduct Mfg. Co., New York.
Porterfield, C. D., Atlas Railway Supply Co., Chicago.
Post, H. R., Chicago Brass and Copper Works, Chicago.
Potee, A. U., Ohmer Fare Register Co., Dayton, O.
Potter, W. B., General Electric Co., Schenectady.
Potts, Walter C., H. Hanshaw, Detroit.
Powell, Charles W., Powell Truck Co., Troy.
Power, William W., Christensen Engineering Co., New York.
Powers, E. C., Ludlow Supply Co., Cleveland.
Pratt, G. E., Niles Car Co., Niles, O.
Pratt, H. T., American Steel & Wire Co., Cleveland.
Priest, E. D., General Electric Co., Schenectady.
Probasco, William M., Westinghouse Companies, Pittsburg.
Provost, George Watson, R. D. Nuttall Co., Pittsburg.
Pulver, G. W., Westinghouse Electric and Mfg. Co., Syracuse.
- Quinn, Hugh, Peter Smith & Co., Chicago.
- Randall, F. C., Christensen Engineering Co., New York.
Ransom, Henry N., Christensen Engineering Co., Cleveland.
Rawls, R. B., American Steel & Wire Co., Chicago.
Rawstron, H., Allen & Morrison Brake Shoe & Mfg. Co., Chicago.
Ray, William D., Westinghouse, Church, Kerr & Co., New York.
Raymond, F. W., Magann Air Brake Co., St. Louis.
Raynor, H. J., Westinghouse, Church, Kerr & Co., Detroit.
Regester, C. W., Westinghouse Electric and Mfg. Co., Pittsburg.
Reinoehl, C. W., Pennsylvania Steel Co., Steelton, Pa.
Reed, Alexander, United States Wood Preserving Co., New York.
Reid, Arthur, Shelby Electric Co., Shelby, O.
Reitzell, William Rufus, Pullman Automatic Ventilator Co., York, Pa.
Relda, H. C., Ohmer Car Register Co., Cleveland.
Renshaw, C., Westinghouse Electric and Mfg. Co., Pittsburg.
Reubens, Charles M., Brady Brass Co., Jersey City, N. J.
Reynolds, A. J., National Ticket Co., Cleveland.

- Reynolds, E. E., Maltby Lumber Co., Bay City, Mich.
Rice, Thomas L., Hunter Illuminated Sign Co., Cincinnati.
Richards, F. A., John Stephenson Co., Cleveland.
Richards, J. F., Seidler-Miner Electric Co., Detroit.
Richards, W. J., Christensen Engineering Co., Milwaukee.
Richards, William F., General Supplies, Detroit.
Ricks, Charles A., G. C. Kuhlman Car Co., Cleveland.
Riley, James, Christensen Engineering Co., Cleveland.
Riley, James J., Christensen Engineering Co., Milwaukee.
Robison, Walter R., Electric Railway Switch Co., Detroit.
Roe, Julian, Crocker-Wheeler Co., Chicago.
Rousseau, A. J., Stromberg-Carlson Tel. Mfg. Co., Chicago.
Rooke, George F., Rooke Register Co., Peoria, Ill.
Root, F. N., Root Track Scraper Co., Kalamazoo, Mich.
Rosenthal, C. D., General Electric Co., St. Louis.
Rummell, G. F., American Steel Wire Co., Chicago.
Runge, E. T., International Register Co., Chicago.
Rushmore, David B., Stanley Electric Mfg. Co., Pittsfield, Mass.
Russell, F. D., Rochester Car Wheel Works, Rochester.
Ruth, F. J., F. J. Ruth & Co., Chicago.
Rutherford, E. C., Magann Air Brake Co., Detroit.
Rutherford, J. A., Pittsburg Reduction Co., Pittsburg.
- Salle, G. M., American Electric Co., Detroit.
Sommon, B. J., American Electric Switch Co., Pittsburg.
Sanford, G. H., Platt & Washburn Refining Co., New York.
Sangworthy, E. S., Adams-Westlake Co., Chicago.
Sanville, H. F., A. & J. M. Anderson Mfg. Co., Boston.
Sargent, F. W., American Brake Shoe and Foundry Co., New York.
Schenck, S. C., Sterling Varnish Co., Pittsburg.
Schneider, F., Van Dorn & Dutton Co., Cleveland.
Schroeder, Albert F., Globe Machinery and Stamping Co., Cleveland.
Schultz, E. F., Murphy Varnish Co. Chicago.
Schumacher, George L., Pneumatic Railway Equipment Co., Cleveland.
Schwable, H. C., Ohio Brass Co., Mansfield, O.
Scott, T., McMitshkern Co., Detroit.
Scranton, B. H., American Electrical Heater Co., Detroit.
Seaman, H., Electric Storage Battery Co., Detroit.
Searing, George S., Hart Switches, Chicago.
Searles, A. L., Fort Wayne Electric Works, Ft. Wayne.
Seavey, F. H., Process Copper & Brass Co., Boston.
Seidler, B. F., Seidler-Miner Electric Co., Detroit.
Seilers, Edward, Ohmer Fare Register Co., Dayton.
Seldon, Jr., William H., Bullock Electric Mfg. Co., Detroit.
Shainwald, J. C., Standard Paint Co., Chicago.

Sharp, Edward P., Lumen Bearing Co., Buffalo.
Sharpe, W. E., Atlas Engine Works, Indianapolis.
Shepard, A. B., General Electric Co., Cleveland.
Shepherd, W. J., Columbian Watch and Clock Holder, Denver.
Sheppard, J. H., American Steel & Wire Co., Worcester.
Sherry, John, Sterling Lubricator Co., Rochester.
Shippy, H. L., John A. Roebling's Sons Co., New York.
Shute, Henry D., Westinghouse Electric and Mfg. Co., Pittsburg.
Sias, F. S., National Conduit and Cable Co., Boston.
Sisson, A. H., Jewett Car Co., Newark, O.
Skinner, C. E., Westinghouse Electric and Mfg. Co., Pittsburg.
Slocum, A. W., Keystone Car Wheel Co., Pittsburg.
Smethurst, W. A., Smethurst & Allen, Philadelphia.
Smettem, William T., Weber Railway Joint Mfg. Co., Chicago.
Smith, D. W., Peter Smith Heater Co., Detroit.
Smith, E. J., Peter Smith Heater Co., Detroit.
Smith, George B., Seidler-Miner Electric Co., Detroit.
Smith, George W., Electric Storage Battery Co., Chicago.
Smith, Herbert W., Stuart-Howland Co., Boston.
Smith, J. C., Allegheny Brake Shoe Co., Allegheny.
Smith, William M., Chicago Insulated Wire Co., Sycamore, Ill.
Sniffin, E. H., Westinghouse, Church, Kerr & Co., New York.
Snow, Philip C., Globe Ticket Co., Philadelphia.
Soper, Warren Y., Westinghouse Electric and Mfg. Co., Ottawa, Ont.
Spear, F. R., Spear & Miller Co., Chicago.
Spear, Grant N., Dearborn Drug & Chemical Co., Chicago.
Speer, J. S., Speer Carbon Co., St. Marys, Pa.
Stanley, G. J., Nernst Lamp Co., Pittsburg.
Stare, Burton R., Peckham Mfg. Co., Kingston, N. Y.
Stare, William, Peckham Mfg. Co., Kingston, N. Y.
Startsman, Charles W., Crocker-Wheeler Co., Ampere, N. J.
Stebbins, E. Vail, Electric Storage Battery Co., Cleveland.
Stecker, Charles, Electric Storage Battery Co., Detroit.
Stedman, J. H., Ohmer Fare Register Co., Rochester.
Stevens, W. F., Kalamazoo Railway Supply Co., Kalamazoo, Mich.
Stewart, B. F., McGuire Mfg. Co., Chicago.
Stewart, John A., John A. Stewart Electric Co., Cincinnati.
Stieringer, Luther, New York.
Stiles, R., American Union Electric Co., Columbus, O.
Stoddard, D. G., Michigan Electric Co., Detroit.
Storer, Norman W., Westinghouse Electric and Mfg. Co., Pittsburg.
Stout, John F., William Hall & Co., Boston.
Stowell, Myron R., Patterson-Sargent Co., Cleveland.
Stridiron, William, Berry Bros., Ltd., Detroit.

- Strieby, F. S., General Electric Co., Louisville.
Sturdevant, C. R., Ohio Brass Co., Mansfield, O.
Sturdevant, S. A., Ohio Brass Co., Mansfield, O.
Sullivan, W. F., Crocker-Wheeler Co., Cleveland.
Sutherland, J. D., American Steel & Wire Co., Pittsburg.
Sutton, William, St. Louis Car Co., St. Louis.
Suydam, H. H., Cincinnati Mfg. Co., Cincinnati.
Swan, G. W., John A. Roebling's Sons Co., New York.
Swink, William, Hunter Sign and Fender Co., Cincinnati.
Sylvester, P. J., Pennsylvania Steel Co., Boston.
- Taber, Edwin C., General Electric Co., Schenectady.
Tate, H. F., National Conduit and Cable Co., Chicago.
Taylor, Frank H., Westinghouse Electric and Mfg. Co., Pittsburg.
Taylor, John, Taylor Electric Truck Co., Troy.
Tell, Richard P., Christensen Engineering Co., Milwaukee.
Temple, Albert, Harold P. Brown, New York.
Tench, W. E., W. E. Tench & Co., Detroit.
Thibert, N., Universal Sanitary Cuspidor Co., Worcester.
Thibert, N. R., Universal Sanitary Cuspidor Co., Worcester.
Tingley, U. G., John A. Roebling's Sons Co., Trenton.
Titus, J. V. E., Garton-Daniels Co., Keokuk, Ia.
Thomas, Edward G., Mechanical Engineer, Boston.
Thomson, F. C., Detroit Automatic Stoker Co., Detroit.
Thomas, Q. A., Strong Spring Co., Detroit.
Thomas, Maurice W., Stanley Electric Mfg. Co., Detroit.
Thomas, R. L., National Lock Washer Co., New York.
Thomas, W. H., Indianapolis Switch and Frog Co., Springfield, O.
Thompson, J. S., American Brake Shoe and Foundry Co., Chicago.
Thompson, W. B., Edison Illuminating Co., Detroit.
Tolman, Charles P., Christensen Engineering Co., Milwaukee.
Tomb, George R., Pneumatic Railway Equipment Co., Cleveland.
Tonks, H., American Union Electric Co., New York.
Trawick, S. W., General Electric Co., Atlanta.
Turner, H. N., Acme White Lead and Color Co., New York.
Turner, J., Powell Truck Co., Troy.
Tyler, Hiram, Globe Register Co., Dayton.
- Umphray, George H., Under-Feed Stoker Co., Chicago.
Underwood, C. W., Westinghouse Electric and Mfg. Co., Buffalo.
Uthoff, Otto W., Ohio Brass Co., St. Louis.
- Vail, Carl M., Westinghouse, Church, Kerr & Co., New York.
Van Deventer, Christopher, Stanley Electric Mfg. Co., Chicago.
Van Dorn, W. T., W. T. Van Dorn Co., Chicago.
Van Sicklen, N. H., American Steel & Wire Co., Chicago.

- Viele, F. S., Standard Underground Cable Co., Pittsburg.
Vosburgh, A. C., New Process Raw Hide Co., Syracuse.
- Wabbling, J. E., American Union Electric Co., New York.
Walker, Henry L., Henry L. Walker Co., Detroit.
Walker, M. S., F. Bissell Co., Toledo.
Wallace, C. D., Yost Writing Machine Co., New York.
Ward, John E., Gold Car Heating and Lighting Co., New York.
Wardwell, C. M., Michigan Electric Co., Detroit.
Warren, Arthur, Westinghouse Companies, London, Eng.
Waters, William L., Christensen Engineering Co., Milwaukee.
Weatherby, W. E., Burroughs Adding Machine, St. Louis.
Weithas, Richard L., National Lead Co., New York.
Welling, William, Hunter Illuminated Car Sign Co., Cincinnati.
Wells, Charles J., Fostoria Incandescent Lamp Co., Fostoria.
Wendell, Jr., Jacob, Wendell & MacDuffie, New York.
Weston, W. H., Paige Iron Works, Chicago.
Wharton, W. Rodman, Wm. Wharton, Jr. & Co., Inc., Philadelphia.
Wheelden, W. E., Christensen Engineering Co., Boston.
Wheeler, John T., F. J. Ruth & Co., Chicago.
Whinery, S. B., Pittsburg Blue Print Co., Pittsburg.
Whipple, A. L., Curtain Supply Co., New York.
White, Leroy H., White Power and Speed Regulator, Kalamazoo.
White, W. A., Johns-Pratt Co., Hartford.
Whitcomb, F. L., Griffin Wheel Co., Chicago.
Whitlock, F. B., National Malleable Casting Co., Indianapolis.
Whiteside, W. H., Westinghouse Electric and Mfg. Co., Pittsburg.
Whitton, R. L., Berry Bros., Ltd., Detroit.
Wickwire, E. F., Sterling-Meaker Co., Newark, N. J.
Wilcox, C. Hart, Arbuckle-Ryan Co., Toledo.
Wilcoxon, C. N., Westinghouse Electric and Mfg. Co., Lima, O.
Wiley, J. R., Standard Underground Cable Co., Chicago.
Wilkinson, A. L., Ohio Brass Co., Mansfield, O.
Willard, E. R., Standard Paint Co., Chicago.
Willebrands, G. W., Street Railroad Crossing, Detroit.
Willcox, Francis W., General Electric Co., Harrison, N. J.
Williams, Edward M., Sherwin-Williams Co., Cleveland.
Williams, Lowell, Pullman Automatic Ventilator Co., Philadelphia.
Williams, W. J., Cahall Water Tube Boilers, Chicago.
Wilson, Harold R., Stanley Electric Mfg. Co., Pittsfield, Mass.
Wise, Clift, Street Railroad Contractor, Chicago.
Wisman, W. H., Devers & Wisman, Mummaville, O.
Wisner, A. C., Knell Air Brake Co., Battle Creek.
Wissing, W. H., Crocker-Wheeler Co., St. Louis.
Woltman, E., Albert & J. M. Anderson Mfg. Co., New York.
Wood, Charles N., Frank Ridlon Co., Boston.

Wood, N. L., Frank Ridlon Co., Boston.
Wood, M. M., General Electric Co., Schenectady.
Woodbridge, J. Lester, Electric Storage Battery Co., Philadelphia.
Woodbury, W. H., Electric Railway Switch Co., Detroit.
Woodward, A. H., International Register Co., Chicago.
Woodward, A. M., Acme White Lead and Color Works, Detroit.
Woodruff, W. W., Westinghouse Electric and Mfg. Co., Pittsburg.
Wranfred, C. N., Ohio Brass Co., Mansfield, O.
Wright, C. R., American Machinery Co., Grand Rapids.
Wright, Louis G., Nichols-Lintern Co., Cleveland.

Yarnall, V. H., American Vitrified Conduit Co., New York.
Yates, M. de F., New Haven Car Register Co., New Haven.
Young, J. S., Griffin Wheel Co., Chicago.

ENTERTAINMENT.

Although the tendency to employ the time during the Convention in the actual business of the meetings and in the inspection of the exhibits is growing stronger each year, there was abundant opportunity at Detroit for indulging in the social side of life. The city in itself is most attractive and the charming weather during the Convention rendered it a pleasure even to walk along the streets. The free use of the street cars centering in Detroit was liberally taken advantage of by all and numerous parties enjoyed the rides through the outskirts and suburbs of the city. The local committee was not remiss, however, in providing ample entertainment for the delegates and supplymen, with their ladies.

An informal reception to the ladies was held at the Cadillac Hotel, the headquarters of the Association, on Wednesday, where the ladies had an opportunity of making and renewing acquaintances. The Ladies' Committee, composed of a number of Detroit ladies, was indefatigable in its efforts to make the visitors feel at home, and it is unnecessary to add that they succeeded to an eminent degree.

The first formal function arranged for was on Wednesday evening when a reception was given at the hotel. This was largely attended by the ladies and gentlemen of the Convention, all of whom had an enjoyable time. There was dancing and refreshments were served.

On Thursday Messrs. Berry Bros., Ltd., of Detroit, tendered a tally-ho ride to the ladies to Belle Isle. It was noticed, however, there were a good many men in the party! Some forty vehicles were used to take the company and it was a great treat, aided by the fine weather.

On Thursday evening the entire lower part of the Detroit Opera House was reserved for the use of the delegates and supplymen, with their ladies, and some six hundred persons enjoyed the play, "When Johnny Comes Marching Home."

On Friday a trolley ride was given to the ladies to Mt. Clemens, via the Rapid Railway and Gratiot Avenue, returning via the Shore Line to the Country Club, Grosse Pointe, where an elaborate luncheon was served, returning to the city at four o'clock. This was the chief entertainment of the Convention, and it was a very enjoyable affair; the perfect weather continuing and all arrangements for the trip being of a most satisfactory character.

The Officers and Executive Committee received many courtesies from the local street railway men, who improved every opportunity to make them happy.

The railway companies of the city of Detroit spared no pains to render their guests comfortable and to ensure them a pleasant sojourn in the city, and in this they succeeded to the complete satisfaction of all concerned.

It may be mentioned that the attendance at the Detroit Convention was the largest in the history of the Association—more than three-quarters of the members sending delegates—and the convention will pass into the history of the Association as a most pronounced success.

Following is a list of the committees in charge of the arrangements for the meeting:

LOCAL COMMITTEES.

GENERAL COMMITTEE.

Jere C. Hutchins, Chairman; George H. Russel, John H. Fry, Albert E. Peters, Walter Ross, Albert H. Stanley, Irwin Fullerton.

EXHIBIT COMMITTEE.

John H. Fry, Chairman; Thomas Farmer, John Kerwin, Edward J. Burdick, W. O. Wood, F. E. Merrill, James Bullen, Albert Eastman.

Wm. Webber, W. O. Russell, Fred C. Peters, James Anderson, F. W. Heninger.

PUBLICITY AND INFORMATION COMMITTEE.

Albert E. Peters, Chairman; Thomas Patterson, Harry V. Catlin, W. F. Bien, Paul Dohrman, David Brown, Thomas Lynch, R. W. F. Peters, C. B. King, Thomas Beath, W. C. Hopper.

ENTERTAINMENT AND BANQUET COMMITTEE.

Irwin Fullerton, Chairman; F. A. Hinchman, Robert Oakman, George W. Parker, Joseph Bampton, F. W. Brooks, A. F. Edwards, John Twomey, Edward H. Ives, Wm. R. Frazer, Louis Schneider, Ernst Klussman.

RECEPTION COMMITTEE.

George H. Russel, Chairman; Gov. A. T. Bliss, Mayor Wm. C. Maybury, C. J. Reilly, H. M. Duffield, Arthur Pack, J. B. Corliss, F. J. Hecker, Dr. Benjamin P. Brodie, C. D. Joslyn, Benton R. Hanchett, Jr., Thos. T. Leete, Jr., G. B. Gunderson, W. E. Quinby, James E. Scripps, H. A. Everett, E. W. Moore, C. M. Swift, R. A. Harman, J. D. Hawks, S. F. Angus, George Hendrie, Clarence Black, O. B. Taylor, J. T. Keena, Michael Brennan, Fred. Smith, Wm. J. Gray, John C. Donnelly.

LADIES' COMMITTEE.

Albert H. Stanley, Chairman; Harry Bullen, W. J. Dawson, Dr. Hedley Williamson, Robert Johnson, John L. Ross, H. S. Swift, Charles Roe, Lewis A. Stoneman, Mrs. George H. Russel, Mrs. Michael Brennan, Mrs. A. B. duPont, Mrs. John H. Fry, Mrs. Albert H. Stanley, Mrs. Irwin Fullerton, Mrs. G. B. Gunderson, Mrs. W. J. Gray, Mrs. John C. Donnelly, Mrs. Walter Ross, Mrs. James T. Keena, Mrs. Arthur Pack, Mrs. Wm. R. Frazer, Mrs. Thomas Farmer, Mrs. F. A. Hinchman, Mrs. J. D. Hawks, Mrs. F. S. Angus, Mrs. C. M. Swift, Mrs. F. W. Brooks, Mrs. C. D. Joslyn, Mrs. Thos. T. Leete, Jr., Mrs. C. B. King, Mrs. C. J. Reilly, Mrs. Joseph Bampton, Miss Sarah H. Russel, Miss Fanny M. M. Peters.

PRESS COMMITTEE.

Walter Ross, Chairman.

P. C. Baker, *Detroit Evening News*.

James Schermerhorn, *Detroit Today*.

George E. Miller, *Detroit Tribune*.

Theodore E. Quinby, *Detroit Free Press*.

Henry P. Hetherington, *Detroit Journal*.

Curt Hoffman, *Abend Post*.

Adolph Niederpruem, *Michigan Volksblatt*.

PRESS AGENT.

G. Walter Meade.

LADIES AT THE CONVENTION.

The following named ladies were at the convention :

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|--|---|
| Mrs. Charles A. Alden, Steelton, Pa. | Mrs. P. V. Burington, Columbus, Ohio. |
| Mrs. O. Perry Allen, Detroit. | Mrs. James Butler, New Brunswick, N. J. |
| Mrs. H. C. Ayres, Detroit. | Mrs. George B. Cade, Asbury Park, N. J. |
| Mrs. W. L. Arnold, Chicago. | Miss Ida E. Caldwell, Detroit. |
| Mrs. E. Percy Ashton, Milwaukee. | Mrs. C. E. A. Carr, London, Ont. |
| Mrs. W. K. Auhbold, Oneida, N. Y. | Mrs. E. R. Carrington, London, Ont. |
| Mrs. Theodore P. Bailey, Chicago. | Mrs. H. V. Catlin, Detroit. |
| Mrs. Joseph Bampton, Detroit. | Mrs. E. G. Chamberlain, New York. |
| Mrs. D. D. Bartlett, Boston, Mass. | Mrs. W. D. Chapman, Greenburg, Pa. |
| Mrs. R. H. Beach, New York. | Mrs. Charles S. Clark, Boston. |
| Mrs. Julia K. Bean, St. Joseph, Mich. | Mrs. H. P. Clark, Pittsburg, Pa. |
| Mrs. W. K. Beard, Philadelphia. | Mrs. H. P. Clegg, Dayton, O. |
| Mrs. R. E. Belknap, Chicago. | Miss Pauline Clitz, Lorain, O. |
| Mrs. W. S. Berry, Pittsburg. | Mrs. C. W. Cobb, Cleveland. |
| Mrs. S. M. Bird, Rockland, Me. | Mrs. S. S. Crane, Altoona, Pa. |
| Mrs. F. B. Black, Mansfield, O. | Mrs. Charles Currie, Akron, O. |
| Mrs. Robert Bland, Milwaukee. | Mrs. F. P. Crockett, Kalamazoo. |
| Mrs. Will H. Bloss, Anderson, Ind. | Mrs. P. J. Dalton, Troy. |
| Mrs. H. S. Blumenthal, Detroit. | Mrs. J. F. Daly, New York. |
| Mrs. Frank G. Bolles, Cincinnati. | Mrs. Edward Daniell, Menominee, Mich. |
| Mrs. J. M. Bramlette, East St. Louis, Ill. | Miss Edna Davis, Cleveland. |
| Miss F. Breckhill, Dayton, O. | Mrs. George S. Davis, Cleveland. |
| Mrs. Willard Brewer, Battle Creek. | Mrs. C. A. Denman, Toledo. |
| Mrs. William F. Breidenbach, Dayton. | Mrs. E. S. Dimmock, Bay City, Mich. |
| Mrs. F. W. Brooks, Detroit. | Mrs. Joseph F. Dixon, Jr., New York. |
| Mrs. Frank L. Brown, Omaha, Neb. | Mrs. H. K. Doolittle, Watertown, N. Y. |
| Mrs. J. Q. Brown, Oakland, Cal. | Mrs. C. B. Easty, East St. Louis, Ill. |
| Mrs. J. Bunce, Battle Creek. | Mrs. John Ehrhardt, Cleveland, Ohio. |
| Mrs. E. J. Burdick, Detroit. | |

- Mrs. Clifford J. Ellis, Chicago.
Mrs. Charles O. Evarts, Kansas
City, Kan.
Mrs. H. A. Everett, Detroit.
Mrs. Thomas Farmer, Detroit.
Miss Farmer, Detroit.
Miss Elizabeth Farmer, Detroit.
Mrs. A. E. Fleming, Pittsburg.
Mrs. James A. Foster, Philadelphia.
Mrs. Wallace Franklin, Detroit.
Miss Grace E. Franklin, Detroit.
Mrs. W. R. Frazer, Detroit.
Mrs. J. H. Fry, Detroit.
Mrs. Irwin Fullerton, Detroit.
Mrs. Robert S. Goff, Fall River,
Mass.
Mrs. J. C. Grace, Toronto, Ont.
Mrs. C. K. Green, Hamilton, Ont.
Miss M. E. Greene, Augusta, Ga.
Miss Grey, Springfield, O.
Mrs. T. B. Griffith, Hamilton, Ont.
Mrs. Gunderson, Detroit.
Mrs. F. B. Hall, Chicago.
Mrs. C. J. Harrington, New York.
Mrs. W. E. Harington, Camden,
N. J.
Mrs. G. A. Harwood, Mansfield,
Ohio.
Mrs. George S. Hastings, Cleve-
land.
Mrs. Thomas Hawken, Rockland,
Me.
Mrs. J. Heil, Milwaukee.
Miss Emma Heise, Detroit.
Mrs. O. D. Henry, Johnstown,
Pa.
Mrs. P. A. Hinds, Indianapolis,
Ind.
Mrs. W. E. Hinman, Dayton, O.
Mrs. J. B. Hogarth, Denver, Colo.
Mrs. J. C. Hopkins, Battle Creek.
Mrs. G. S. Johnson, Grand Rap-
ids, Mich.
Mrs. J. Jordan, Cleveland.
Mrs. John Kerwin, Detroit.
Mrs. A. S. Kibbe, Joliet, Ill.
Mrs. C. B. King, Detroit.
Mrs. C. K. King, Mansfield, O.
Mrs. F. E. Kinsman, New York.
Mrs. George W. Knox, Chicago.
Mrs. Charles H. Lahr, Akron, O.
Mrs. Albion E. Lang, Toledo, O.
Mrs. E. S. Langworthy, Chicago.
Mrs. Leach, Buffalo.
Mrs. A. S. Linn, Jr., Utica, N. Y.
Mrs. J. H. Livsey, Detroit.
Mrs. J. Lucas, Cleveland.
Miss J. Lucas, Cleveland.
Mrs. S. G. Ludlam, Gloucester,
N. J.
Mrs. Thomas W. McAndrews,
Hoboken, N. J.
Mrs. Ira A. McCormack, New
York.
Mrs. W. G. McDole, Cleveland.
Mrs. D. W. McGregor, New
Brunswick, N. J.
Mrs. W. A. McGuire, Chicago.
Mrs. Walter C. McKinlock, Chi-
cago.
Mrs. W. J. McQueen, New York.
Miss McQueen, New York.
Mrs. W. B. McVicker, New York.
Mrs. H. C. Mackay, Milwaukee.
Mrs. George E. Macomber, Rock-
land, Me.
Mrs. G. P. Magann, Toronto, Ont.
Mrs. John J. Magilton, Schene-
ctady, N. Y.
Mrs. A. G. Maish, Des Moines,
Ia.
Mrs. Frank R. Marks, Cleveland.

- Mrs. Thomas Marlow, Des Moines, Ia.
Mrs. A. C. Marshall, Detroit.
Mrs. C. W. Martin, Chicago.
Mrs. T. C. Martin, New York.
Mrs. C. F. Medbury, Detroit.
Mrs. Wesley Meeten, New York.
Mrs. A. H. Metzelaar, Battle Creek.
Mrs. J. Millar, Buffalo.
Mrs. Thomas Millen, New York.
Mrs. D. N. Miller, Hamilton, Ont.
Mrs. J. G. Miller, St. Louis.
Mrs. John H. Miller, Springfield, Ohio.
Miss C. Miller, Springfield, O.
Mrs. J. E. Mills, Chicago.
Mrs. Thomas J. Minary, Louisville, Ky.
Mrs. F. J. Miner, Detroit.
Mrs. G. R. Mitchell, Springfield, Ohio.
Mrs. D. S. Moffatt, Cleveland, O.
Mrs. Miles F. Moore, Chicago.
Mrs. Elmer P. Morris, New York.
Mrs. F. B. Musser, Harrisburg, Pa.
Mrs. S. L. Nelson, Danville, Ill.
Mrs. Edgar S. Nethercut, Chicago.
Mrs. F. H. Newcomb, New York.
Mrs. E. G. Newhall, Detroit.
Mrs. H. A. Nicholl, Rochester, N. Y.
Mrs. Alonzo E. Nutter, Newark, N. J.
Mrs. Robert Oakman, Detroit.
Mrs. F. M. Odena, Jr., Cleveland.
Mrs. J. W. Oliver, Grand Rapids, Mich.
Mrs. Arthur Pack, Detroit.
Mrs. D. O. Paige, New York.
Miss A. Paige, New York.
Mrs. J. H. Parshall, Detroit.
Mrs. L. A. Parshall, Detroit.
Mrs. James Partridge, Sandusky, Ohio.
Mrs. T. H. Paternell, Pittsburg.
Mrs. A. E. Payne, Cincinnati.
Mrs. H. M. Pease, Buffalo.
Mrs. D. W. Pell, Lima, O.
Miss Penington, Chicago.
Mrs. William Pestell, Worcester, Mass.
Miss F. M. M. Peters, Detroit.
Mrs. W. E. Phelps, Detroit.
Mrs. E. F. Phillips, Detroit.
Mrs. F. B. Pierson, Detroit.
Mrs. H. H. Polk, Des Moines, Ia.
Mrs. W. Porter, Chicago.
Mrs. William W. Porter, New York.
Mrs. A. E. Potter, Providence, R. I.
Mrs. George L. Radcliffe, Cleveland, O.
Mrs. Andrew Radel, New Brunswick, N. J.
Mrs. R. L. Rand, Kalamazoo, Mich.
Mrs. Henry N. Ransom, Cleveland.
Mrs. O. M. Rau, Milwaukee.
Mrs. William D. Ray, New York.
Mrs. H. J. Raynor, Detroit.
Mrs. Alexander Reed, New York.
Mrs. E. Reed, New York.
Mrs. C. H. Reichard, Camden, N. J.
Mrs. W. J. Richards, Milwaukee, Wis.
Mrs. W. F. Richardson, Chicago.
Mrs. Albert S. Richey, Anderson, Ind.
Mrs. C. A. Ricker, Cleveland.

- Mrs. Walter Ross, Detroit.
Miss B. Rosseau, Chicago.
Miss E. Rosseau, Chicago.
Mrs. E. N. Root, Kalamazoo.
Mrs. George H. Russell, Detroit.
Miss Sarah H. Russell, Detroit.
Mrs. William C. Sampson, Anderson, Ind.
Mrs. H. C. Schwable, Mansfield, Ohio.
Mrs. A. W. Slocum, Pittsburg.
Mrs. F. Skillman, Gloucester, N. J.
Mrs. C. E. Skinner, Pittsburg.
Mrs. A. H. Smith, New York.
Mrs. F. E. Smith, Chicago.
Mrs. George W. Smith, Chicago.
Mrs. Grant W. Spear, Chicago.
Mrs. George A. Stanley, Cleveland, O.
Mrs. W. F. Stevens, Kalamazoo.
Mrs. B. F. Stewart, Chicago.
Mrs. H. S. Swift, Detroit.
Mrs. P. J. Sylvester, Boston.
Mrs. W. B. Tarkington, Omaha, Neb.
Mrs. Maurice W. Thomas, Detroit.
Mrs. J. J. Thorne, Bay City, Mich.
Miss Amelia R. Tolman, Milwaukee.
Miss Ida J. Tompkins, Detroit.
Mrs. E. E. Russell Tratman, Chicago.
Mrs. G. H. Umphray, Detroit.
Mrs. H. E. Vreeland, New York.
Mrs. H. H. Vreeland, New York.
Mrs. Henry L. Walker, Detroit.
Mrs. William Walmsley, Chicago.
Miss Walmsley, Chicago.
Mrs. Thomas F. Walsh, New Brunswick, N. J.
Mrs. Arthur Warren, London, England.
Mrs. Charles W. Wason, Cleveland.
Mrs. E. J. Wehrley, Danville, Ill.
Mrs. Frank Wells, New York.
Mrs. J. E. Welsh, Des Moines, Ia.
Miss Jessee Wharton, Butte, Mont.
Mrs. W. H. Whiteside, Pittsburg.
Mrs. R. L. Whitton, Detroit.
Mrs. F. W. Wilcox, Harrison, N. J.
Mrs. A. C. Wisner, Battle Creek.
Miss A. Wood, Schenectady.
Mrs. Charles N. Wood, Boston.
Mrs. J. Lester Woodbridge, Philadelphia.
Mrs. M. de F. Yates, New Haven, Conn.
Mrs. J. M. Yount, Jersey City, N. J.
Mrs. F. M. Zimmermann, Aurora, Ill.

1881
21st Annual Banquet
of the 1902
American Street Railway
Association.

Hotel Cadillac, Detroit, Mich.

October 10th.



Menu

CANAPÉ

Cadillac Cocktails

 HUITRES, EN COQUILLE
 CÉLERI

TORTUE VERT, CLAIRE, AUX QUENELLES *Amontillado*

OLIVES

AMANDES SALÉES

 CÔTELETTE DE SAUMON, VICTORIA
Sauterne B. G. 1884

CONCOMBRES

POMMES, JULIENNE

 CHAMPIGNONS, FRAIS, CADILLAC

FILET MIGNON, À LA MARTIN

Pontet Canet B. G.

PETIT POIS, EN CAISSE

 PONCHE, ROMAINE
Cigarettes

 CAILLE, RÔTI, AU CRESSON
Pommery Sec

 SALADE CHIFFONADE*

GLACE NESSELRODE GÂTEAU, ASSORTIE

FROMAGE

BISCUIT

Brandy

CAFÉ

Cigars

Music

- | | | | |
|-----|--|-------------------------|---------------------|
| 1. | MARCH, | "ON DUTY," | <i>Rosey</i> |
| 2. | OVERTURE, | "THE SILVER BELLS," | <i>Schlepegrell</i> |
| 3. | "THE MISSISSIPPI BUBBLE," | | <i>Haines</i> |
| 4. | WALTZ, | "LAZARRE," | <i>Blanke</i> |
| 5. | GRAND SELECTION FROM THE OPERA "IL TROVATORE," | | <i>Verdi</i> |
| 6. | TWO STEP, | "BILL BAILEY," | <i>Mackie</i> |
| 7. | SELECTION, | "MAID MARIAN," | <i>DeKoven</i> |
| 8. | INTERMEZZO, | "CAVALLERIA RUSTICANA," | <i>Mascagni</i> |
| 9. | { "ON A SUNDAY AFTERNOON," } | | <i>Tilzer</i> |
| | { "PLEASE LET ME SLEEP," } | | <i>Brymn</i> |
| 10. | MARCH, | "THE BACHELOR MAIDS," | <i>Clair</i> |
| 11. | "ZALLAH," | AN EGYPTIAN DANCE, | <i>Loraine</i> |
| 12. | "GALOP AUTOMOBILE," | | <i>Tobani</i> |

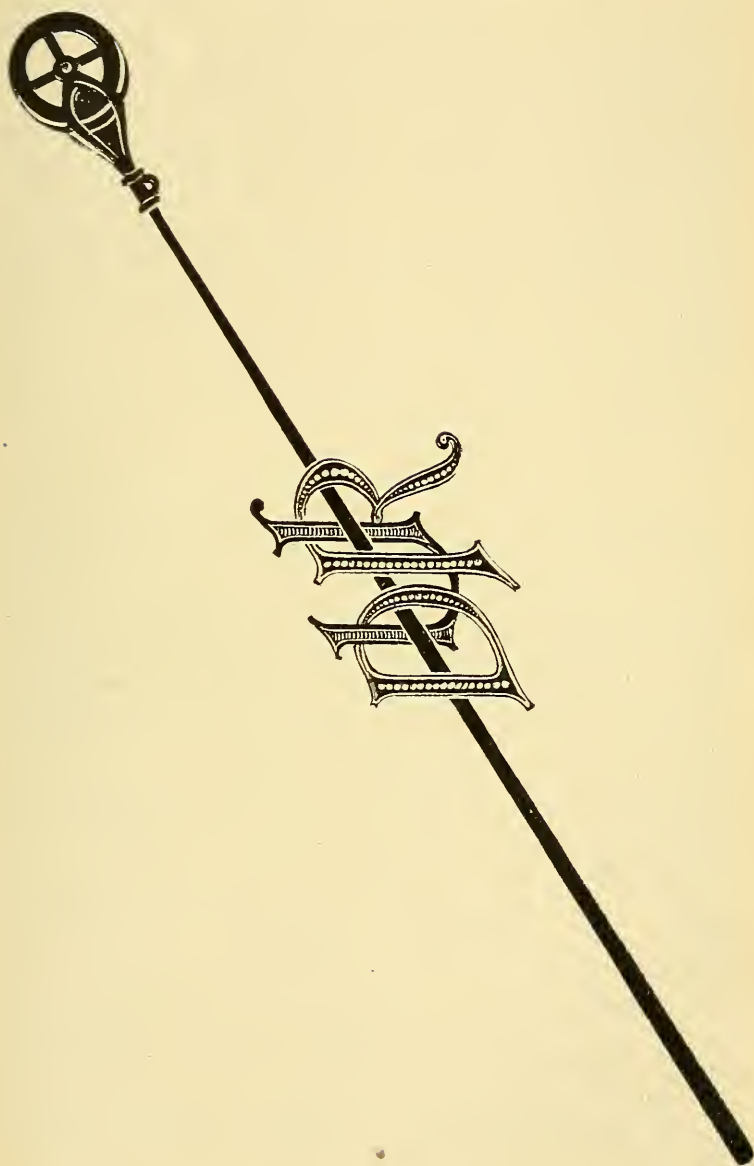
Hotel Cadillac Orchestra

Installation of Officers Elect

Toasts

Toastmaster, H. H. VREELAND,
New York.

- | | | |
|--|------------|----------------|
| "SLUMBER SONG," | Quartette, | <i>Lohr</i> |
| MRS. ELLIS, MISS BEYER, MR. JARVIS, MR. SLADE. | | |
| "THE GROWTH OF DETROIT AS I HAVE NOTED IT." | | |
| HON. WILLIAM C. MAYBURY, Mayor of Detroit. | | |
| "I HAD A FLOWER," | Song, | <i>Kellie</i> |
| MRS. ELLIS. | | |
| "THE F.—30 MOTOR," | | |
| GEN. EUGENE GRIFFIN, New York. | | |
| "THE BAY OF BISCAY," | Song, | <i>Dibdin</i> |
| MR. JARVIS. | | |
| "HOW THE PEOPLE WOULD RUN A STREET RAILWAY," | | |
| MR. MICHAEL BRENNAN, Detroit. | | |
| "ANGUS MACDONALD," | Song, | <i>Cowen</i> |
| MISS BEYER. | | |
| "THE FUTURE ELECTRIC RAILWAY," | | |
| MR. W. CARYL ELY, Buffalo. | | |
| "GYPSY JAHN," | Song, | <i>Emery</i> |
| MR. SLADE. | | |
| "THE TROLLEY ; ITS FUTURE STATE," | | |
| MR. JAMES T. KEENA, Detroit. | | |
| "THE PARTING KISS," | Quartette, | <i>Pinsuti</i> |
| MRS. ELLIS, MISS BEYER, MR. JARVIS, MR. SLADE. | | |



THE BANQUET.

The Detroit banquet was quite up to the high standard which the banquets of the Association have attained. There was nothing lacking in the cuisine or arrangements for the service, and the decorations were appropriate. The vocal music rendered between the toasts was especially acceptable.

The presence of Mr. Jere C. Hutchins, the President-elect of the Association, who had come from a sanitarium where he had been under treatment, was a matter of satisfaction to the guests; and his remarks, although made under considerable physical stress, were received with much favor.

The four hundred persons, ladies and gentlemen, at the banquet, passed a very enjoyable evening.

REMARKS OF PRESIDENT VREELAND.

President Vreeland—In accordance with the usual custom of the American Street Railway Association, the President takes this opportunity of explaining to the guests of the Association who we are and what we represent. In order that I may not infringe on the time allotted to the gentlemen who are to speak to-night, I will say for the information of the ladies and gentlemen who are present that we represent the United States and Canada in an industry that started only a few years ago and has made a progress, the story of which reads like the tale of Aladdin's Lamp in the Arabian Night's Entertainment. Our business has gone beyond what any of us anticipated, and our membership to-day represents 25,000 miles of electric railroads in the United States and Canada, with some \$2,000,000,000.00 in capitalization. You have here representatives of the street railways from the Gulf to the St. Lawrence, and from Maine to the border States on the Pacific. You have here, gentlemen, not the men who operated street railroads fifteen and twenty years ago, and who were the capitalists of the day, but you have the workingmen, the men who are practically in charge of these large railroad properties; men who took themselves up by their boot straps

and lifted themselves into their positions. (Applause.) We have reached an era in street railroading where the man who represents the property does not talk to the public, does not talk to the municipality, does not talk to the patrons of the company with his hand on his pocketbook. The men who handle the interests of these properties are representatives of interests of thousands and thousands of shareholders. It is only the other day that a man, when he did any talking in connection with these properties, did it largely for himself. On the other hand, we who are operating these properties to-day, are operating them as a great trust. We represent the interests of thousands. The individual interest has sunk out of sight. We have expended millions of dollars in the development of transportation facilities which are the greatest boon to the people of this country; the greatest boon to its cities; the greatest boon to its towns; the greatest boon to its suburban and interurban territory, and to-day we come here in convention assembled representing these large interests.

In coming to your city we were happy in receiving a most cordial welcome. We came here for business. We have transacted our business in an orderly manner and we have no doubt that the business we have transacted will be of value in the further development of the electric railroad, which has so largely aided in the civilizing and broadening, and bringing into closer communication, all the territories of the United States and Canada. We have not been niggardly in our expenditure of money. The electrical art has gone ahead faster than any man could keep pace with it. The things of yesterday have been thrown away for the things of to-day. We have expended millions of dollars in electrical development which is back of us, but we are going ahead and not stopping. The high voltage long distance transmission of electricity, which has been developed in the last five years, has made this wonderful extension of the urban and interurban electric railway business possible. Even to-day, in our Association, we are considering mechanical and electrical problems

of the greatest importance, and which, in their ultimate applications, may make it desirable for us to lay aside much of the work which we have done in recent years.

Gentlemen, as the retiring President of your Association, it becomes my duty to call your attention to the officers elected to preside over the deliberations and manage the affairs of the Association during the coming year. On the last day of our convention it is customary to elect a new set of officers, and it is the custom to install the newly-elected officers at the banquet. Your Committee on Nominations presented the names of the following gentlemen, for the offices indicated, and they were unanimously elected:

President, Jere C. Hutchins, Detroit; First Vice-President, W. Caryl Ely, Buffalo; Second Vice-President, W. Kelsey Schoepf, Cincinnati; Third Vice-President, P. S. Arkwright, Atlanta; Executive Committee, the President, the Vice-Presidents, and H. H. Vreeland, New York; R. T. Laffin, Worcester; Andrew Radel, Bridgeport; Walter P. Read, Salt Lake City; Willard J. Hield, Minneapolis; Secretary and Treasurer, T. C. Penington, Chicago.

It is usual to listen to an address from the incoming President at the close of the session, but owing to the illness of Mr. Hutchins, and the fact that he has been more active during the convention than he should have been, contrary to the advice of his physician, he was not able to appear at the convention at the time of his election; and I will take this opportunity of presenting your new President, Mr. Jere C. Hutchins. (Loud applause.)

REMARKS OF PRESIDENT-ELECT HUTCHINS.

Mr. Hutchins—Mr. President, Ladies and Gentlemen: I very sincerely appreciate the graciousness of my introduction and your generous greeting. It happens that I face you in a double role. I desire, as Chairman of the Local Committee of Arrangements, to thank all of the members of our local committees for their efforts in your behalf. (Applause.) And I more especially desire to thank each of you, particularly

the ladies, for the great pleasure your presence affords us. None of us here in Detroit can live long enough to forget the scenes and faces of the Detroit Convention (applause), or to cease to foster and cherish those sweet friendships which have been formed and cemented here. (Applause.)

Among those who are to address you this evening are our accomplished Mayor (applause), and two other Detroit gentlemen of Hibernian extraction. (Laughter and applause.) I had intended firing a few anticipatory shots at them, because what they may say will doubtless be deserving of some censure; but the action of your delegates, as announced by Mr. Vreeland, in placing me at the head of this great national organization has quite disarmed me for such a task, so that whatever further I may now be able to say to you must be said as it wells up from my heart in appreciation of the great honor that has been conferred upon me, upon my company, and upon my City and State. (Applause.)

I am very glad, ladies and gentlemen, that it is my good fortune to live on earth now;—not at some former time, not in some future age, but NOW, in the glorious beginning of this new century, when the men and women of this splendid assemblage are my co-temporaries, associates and friends. This is, indeed, a potent age and time. The light of all the truths affecting mankind which have been evolved from out the ages are focused upon it, and there are not among the sons of men any who are doing more for the glory of their time than is being done in the great electrical field, in which your efforts are being directed. (Applause.) I mean electric railway workers in no restricted sense. I mean all electric railway workers, and especially those engineers and inventors and manufacturers whose splendid work is now being exhibited in Detroit. (Applause.) Your part in life is to provide for the convenient comings and goings of the people. This you have accomplished in our great centers of population so that the masses are now moved as move the tides of the ocean; and you have done infinitely more—you have invoked the silent forces of nature and linked these busy centers with the

quiet country side, and at your touch the tired city worker now swiftly escapes to nature's free out of doors. (Great applause.) Here, is the clamor and the tumult and the rush and the roar of the great city. There, a few minutes away, is the woodland, the waving grass, the rounding shore, the grandeur of fields, the setting of orchards; all that comes with the gentle rays of morning, and all the beauty of the setting sun; and you have brought these sweet and ennobling scenes within the reach of all. Your work is revolutionary and will be felt while time lasts; for these great highways you have created and are creating lead to health and happiness; not alone over shady lanes and over the hilltops, but you are aiding in lifting our civilization up to those still higher summits very near that realm which lies a little beyond them. (Applause.)

Ladies and gentlemen, I thank you very much for your attention and now leave you in the hands of our accomplished toastmaster, Mr. Vreeland. (Applause.)

TOAST—"THE CITY OF DETROIT." RESPONDED TO BY
MAYOR MAYBURY.

The Toastmaster (Mr. Vreeland)—Ladies and Gentlemen: I now assume the role of toastmaster, and I ask your indulgence, as it is something I have never done before—in Detroit. If you will kindly refer to the first page of the menu card (and I will wait a moment until you have an opportunity), you will notice in the bow of the boat, in which Cadillac is approaching the shore, on September 26, 1701, partly concealed by the drooping folds of the flag, a young man, of whom I will tell you later. He is now Mayor of your city. What his history has been during the intervening years, you Detroit gentlemen know better than I. It is enough to say that he is Mayor of Detroit, and, as he said himself at the convention the other day, he is a bachelor. After looking over this assemblage this evening, I cannot understand that for a minute.

Gentlemen, the welcome given the American Street Railway Association was as full and free as any I have heard ex-

tended in any city. The Mayor did not present us the key; he unlocked the doors and threw away the key. He also tied up the police. No member of this Association, so far as the records go, has gotten into any trouble since he has been in Detroit; but in addition to all this they opened the doors of the city hall and put the word "Welcome" above it. I have not had an opportunity, on account of my arduous duties, to go over and take charge in your name; and as we are leaving town in the morning, and the time is too short for us to make the attempt, I think we will have to leave the Mayor in charge of the city until the next time our friend Hutchins invites us here. Mr. Maybury has been Mayor so long that they may bury him as Mayor. (Laughter and applause.) The Mayor will now respond to the toast, "The City of Detroit."

Mayor Maybury—Mr. Toastmaster, Ladies and Gentlemen: This is not the first time that I have discovered the lawless disregard of truth and veracity which attaches to New Yorkers when they come into the West. A glance at the very handsome canoe on the cover of the menu card, and the fact that there are no ladies in the company, will acquit me any time; and I have discovered a peculiar thing in my life when my friends seem to refer so often to my loneliness and weakness—I discover that it is always done by one who has been most signally and graciously treated in this world. Why, my dear friends, our friend Vreeland, instead of attacking me in my defenseless position, ought to go down on his knees three times a day and be thankful that he has such a good helpmate. (Applause.)

I am somewhat disconcerted to-night, and I will explain to you why I am disconcerted. Our dear friend, Jere Hutchins, as we familiarly call him, was sick in the hospital a few days ago, and I called upon him. While there I took occasion to read to him the speech I had prepared for this occasion. He borrowed my manuscript, and it is evident that he learned the speech well; and it is a good speech. (Laughter and applause.) You see what little chance I have here, my dear friends, either with the stranger or the neighbor, and I believe my only means of escape is to get myself a wife. (Laughter.)

Now, I want to pause for a moment to do that thing which wells up from my heart with great spontaneity—to tell you, on behalf of the citizens of Detroit, of every creed and kind, that we thank you for having honored Jere Hutchins. (Applause.) Some years ago we

learned that a gentleman from Kentucky was coming here to take charge of our railroads, and we looked upon his coming with unusual interest as to the outcome of his administration of the affairs of our street railway. He was not here very long before we discovered that he was possessed of a most exemplary character, a remarkable sweetness of disposition, coupled with rare executive ability, which has caused you to honor him to-day, as we always honor him in this community. (Applause.) I say to you to-night that closely associated with the pleasure of being here is the fact that the cloud is lifting that seemed to surround Mr. Hutchins a few days ago, and to-night we are grateful that Jere Hutchins is permitted to be here. Long and lovingly may he linger with us; long and lovingly, only to become, as some day he must, a tender and sainted memory, a memory that will linger as the twilight lingers after the sun has set.

As I look upon the list of toasts, and see the gentlemen who are to succeed me, I feel somewhat as the oculist did when he asked a man, to whom he had given two or three bottles of his eye elixir, to send him a testimonial, and some time afterward he received the following: "Dear Doctor—I was blind, but now, since I have taken two bottles of your elixir, I can see my finish." I happened, on one occasion, when I was making an address, to refer to "ships that pass in the night," and I was called aside by some of the boys and asked if I had not made a mistake, and whether I did not refer to *chips* that pass in the night. Some gentleman said that the trouble was not with the ships or the chips, but the great trouble was the carriages that often pass in the night.

We have in the railroad service in Detroit a number of very amiable gentlemen. It is the greatest pleasure in the world for me to give a note to a man seeking employment on the street railway, and send him with it to Mr. Stanley. It often happens that the man is not successful in securing employment, but they all say it is the greatest pleasure in the world to be refused by Mr. Stanley. Then we have Mr. Walter Ross. You ought to see Walter Ross when a party comes around who has had a collision with a street car, which has taken a few inches of paint off his wagon, and he makes a claim large enough to cover the entire cost of the wagon. That is the time when you see Walter Ross at his very best. You will hear before long from the attorney of the company, Mr. Michael Brennan, a gentleman who sits to the left. Mr. Brennan belongs to a very exclusive club, which is called the Yondotega Club. It is located on Jefferson avenue, and probably some of you have been invited to visit the club. It is said to represent in its membership the greater part of the wealth and all of the wit of Detroit; and it is customary for the conductor on the observation car to stop the car opposite the club

and say: "It now affords me great pleasure to point out the Yondotega Club, containing most of the wealth and all the wit in the city of Detroit." It so happened that last week Mr. Brennan was a passenger on that car, and after the usual speech had been made, Mr. Brennan stepped off the car. The conductor added, "That is one of them, but I do not know which he is." Mr. Brennan went in and threw dice with himself for a half hour to see which class he belonged to. (Laughter.)

I had a peculiar experience before coming here to-night. I went to the barber shop and there was a gentleman in one of the chairs who was much distressed. The voice was familiar, and the gentleman kept saying to the barber, "Shave me so that I will look scrappy to-night; I am going to attend the railroad men's banquet. Make me look like a terror." The barber folded up his razor and said, "You ought to have told me that before I began, for the job was complete then"; and Mr. J. T. Keena arose from the chair. (Laughter.)

Now, my dear friends, this occasion is worthy of a sentiment, not all of levity, though all of pleasure, and may I paraphrase the words of a distinguished writer of our day in expressing some of the recollections, not of the Detroit of the past, but the recollection of this night and Detroit as represented here. In childhood I placed my little boat upon the water, freighted with childish anticipation, and I saw her cross the pond and strand upon the further shore. In boyhood I sent out, in all joyful anticipation of that happy time of life, a more pretentious vessel, and she sailed away, and never returned. In the full flush of manhood I sent out the great four-master, laden with every ambition, and she, too, disappeared away beneath the horizon, and never came back again; and then I sent out, as we do now, our vessel charged with charity and laden with kindly greetings to all whom she meets upon her way, knowing that she will alone and surely return laden with affection and brotherly love. (Applause.)

TELEGRAM FROM GEN. EUGENE GRIFFIN.

The Toastmaster—Ladies and Gentlemen: A few weeks ago I requested General Eugene Griffin, of the General Electric Company, to talk to us to-night on the development of the electric motor. Mr. Griffin said that a request from me was a command, and President Coffin, of the General Electric Co., assured me such was the fact. The day before yesterday I received a telegram from General Griffin that some matters in connection with the subway in New York made it almost imperative that he should remain in that city, but that he would

keep his engagement to attend this banquet and respond to the toast, if I wired him to come. I have a similar message from Mr. Coffin. We all know what a good friend of ours General Griffin is, and on such an occasion we could do nothing but release him.

We have the following message from General Griffin:

New York, October 10, 1902.

Mr. H. H. Vreeland, care Cadillac Hotel, Detroit.

Please accept for yourself and associates my deep regret that imperative duties here have prevented my being with you to-night. It would have been instructive and inspiring to me to have been able to meet such a splendid and representative body of men. I desire to warmly congratulate you upon what I am informed is the most brilliant meeting of the kind which has ever taken place.

EUGENE GRIFFIN.

TOAST—"HOW THE PEOPLE WOULD RUN A STREET RAILWAY." RESPONDED TO BY MR. MICHAEL BRENNAN, OF DETROIT.

The Toastmaster—We now come to the toast which explains why I am acting as toastmaster to-night. The gentleman who is to respond to this toast would not care to speak if anyone in Detroit, who knew his past life, were to introduce him. Consequently they called upon me to act as toastmaster. I know nothing about him and do not know in what manner to introduce him to my railroad associates. I assume that he needs no introduction to the Detroit people, from what I have heard. I have read his biography, but there is nothing special or important there. It runs along the usual course—he started as a poor boy, had an ordinary education, etc., and finally was admitted to the bar; and it goes on to say that he is now studying law at the expense of the Detroit United Railway. The gentleman needs no introduction, as I say, to the Detroit people, and he certainly will never again require an introduction to this Association, should we be fortunate enough to again meet in Detroit. Gentlemen, I have the honor to introduce Mr. Michael Brennan, who will respond to the toast, "How the People Would Run a Street Railway."

Mr. Brennan—Mr. Toastmaster, Ladies and Gentlemen: Even if I had nothing to say to-night, this inspiring audience, the fair faces of the ladies, and I may say, perhaps, without any exaggeration, the intelligent faces of the gentlemen, would be a sufficient excuse, even without preparation, to say a few words. I am not gifted by nature, like our chairman. On one occasion, when asked by one of his colleagues at one of those large meetings that are held by the Metropolitan Street Railway Association, in New York—"Mr. Vreeland, how long can you talk on a given subject?" "Well," Mr. Vreeland said, "if I have nothing to say I can speak for two days at a time, but if I have something to say I can speak indefinitely"; and this statement needs no affirmation or testimony of mine, after you have seen him for two days conducting that splendid meeting in the cellar of the Light Guard Armory, to reach that conclusion. Why, ladies and gentlemen, if I had that magnificent physical presence, and that glorious voice, with my own head, I could do almost anything. (Laughter and applause.) That is no slight compliment to Mr. Vreeland.

I was referred to, I suppose, in that aggregation of speakers that Mr. Hutchins mentioned in his address, when he said that three gentlemen of Hibernian extraction would address you. There is really only one gentleman of real Hibernian extraction amongst them, and I am the person. My friend, Mr. Maybury, the mayor, although having a splendid map of Ireland written upon his expressive countenance, and my little friend, Mr. Keena, my old companion—these are representatives of the little tribe of Irishmen that in the old country are called "Leprehauns" or "fairies." Besides that, they are simply second growth. They were not launched in Ireland at all; they were simply traced to Ireland, some distance back. (Laughter.)

I notice by the program that I am to respond to the toast, "How the People Would Run a Street Railroad." Some of you are afraid that I shall pull out my manuscript and possibly give you a collection of statistics. I have no such intention, because after a superficial study of this question I came to the conclusion that the people could not run a railroad at all. I started first with the ladies; I know they cannot run a railroad, because they would have to put the motorman on the rear platform in order to carry out their customary habit of alighting from a car by turning their backs upon him. I know they cannot run a railroad, especially in the summer time, for you have noticed, no doubt, when a woman desires to get on an open car, she usually walks up and down the side of the car, each seat beckoning, and out of politeness she does not know which seat to get in. The newspapers cannot run a street railroad, with all due deference to my friend, Mr. Quinby (of the Free Press). The newspapers are not always well posted on the situation of the street rail-

roads. They oftentimes think we are the despised aggregation of wealth and tyranny that the little politician says we are. Now, I do not say that against all the newspapers, because Mr. Quinby here knows there is no greater friend of the newspaper than I am, but I am simply stating how the ordinary newspaper goes at the street-car question—not always in the right light. We will pass the newspapers, as I think they are going to be our friends, especially after their eyes are opened and they come to see our good points. The politician cannot run a railroad, and I can prove that to the satisfaction of the gentlemen, and I know I can prove it to the satisfaction of the ladies, because I do not think our intelligent, astute and generous mayor, even, can run a street car. I heard Mr. Maybury's address the other morning. It was a splendid confession that the street-car people in this city knew how to run their business. Mr. Maybury tried to run our business for a short time by making us operate a three-cent-car-fare system, but he now acknowledges that he was wrong, and admits that the people in charge of the property know how to operate the system in a satisfactory manner. Whenever you hear a politician, and he is more than a politician—he is a statesman—when ever you hear a man like Mr. Maybury admit he is wrong, then you know there is some progress going on in the world. I will not speak of municipal ownership; that is too abstract and absurd. I am not one of those who believe in the municipal ownership of street railways. I think that when our boards of public works, our aldermen, and our various municipal bodies find it necessary to corral public servants in some large open lots in our city, in order to tell them how to vote, that we had better not encourage municipal ownership, and thereby add such a large number to the already large list of city employes; so, to my mind, municipal ownership is out of the question. (Applause.)

I have come to the conclusion, after the opening remarks of our eloquent chairman, that the people who know how to run a street railway system are the people who are doing it; the people who are not running it in their own selfish interest, but the people who are running it in the interest of the small stockholder, the widows and the orphans, and others, who have their all invested in street railroad properties. I think that these people know how to run a street railway. (Applause.) I think they know how and are doing it; because there is not an invention, there is not an improvement, there is not a bit of machinery that goes into the composition and make-up of a street car, but intelligent men like Mr. Vreeland, Mr. Hutchins, Mr. Ely and other street railway men take advantage of for their own interest as well as the interest of the public, and the public gets the very best appliances that invention and improvement can suggest. (Applause.)

I was much pleased with that part of the address of welcome of Mr. Maybury, at the opening of the Convention, when he described the benefits of the street railway industry to all classes. I was particularly pleased with the address of your President, when he said that instead of cringing, instead of apologizing, instead of whining, when the politician, or the newspaper, or some other interest opposed your interests, that the position you should take, that we all should take, was to stand up for the rights of your property, the same as the grocer or dry-goods dealer stands up for his rights, and the manufacturing man stands up for his interest. (Applause.) That is the position we should take, and if we take that position, the newspaper men will come to our side. Instead of the newspaper men saying that you should only have a franchise for five years, and in every way possible seeking to discourage the building of good railroads, you will see the newspaper men stand up for giving long franchises, the same as are given to steam railroads, and you will see the politicians stand up and give you every facility and every accommodation for the building of railroads that will defy time as the world goes on. (Applause.) That, instead of being terrified and frightened by the attacks of the reformer or the politician, you will have them with you in all your enterprises.

But I did not start out to philosophise or preach. I notice that, further down on the programme, there's a toast relating to the future of the street railway, which is to be responded to by our friend, Mr. Ely, of Buffalo, and also another toast relating to the future state of the street railway, which is to be responded to by my worthy friend, Mr. Keena. Now, I don't see where they make the distinction between the future and future state of the street railway, except possibly that the practical man is going to tell you what will become of the street railway in this world, and Mr. Keena, being the man of speculation and imagination, and of far-reaching thought, who does not know anything about street railways in this life, will tell what is going to become of them in the next. I will leave that subject to the able hands of Mr. Ely, who will tell you about the street railways on earth, and to Mr. Keena in Hades, where I presume he will take it up with our enemies. At any rate, we are martyrs-elect, being entitled to the crown, not only of martyrdom, but also to the crown of civic canonization some time after we die, unless there is some such system as the railways have, in which some over-zealous advocate will pick out the bad spots in our career, like our chairman, and present us in a false light before the audience. And, by the way, I had almost forgotten the introduction that our worthy mayor had given me about the Yondotega Club. I was so wrapt up in his eloquence that I forgot the subject-matter of it. Mr. Maybury has such

a peculiarly sweet voice, that has such an effect upon the ladies, that he is not like the man the poet describes who could be happy with either dear charmer, were t'other dear charmer away. That is not true of Mr. Maybury. He can be happy with each and every one of them.

Speaking of the Yondotega Club, I belong to that club, which he calls exclusive. The story is true, substantially as he told it, because Mr. Maybury never tells an entire untruth. There is always some foundation for what he says. I was on the observation car Yolande, and I will tell you why I was there. I have a pass on the road. I had forgotten the pass, and I had no money. I knew the colored porter, Carey, of the observation car. I thought Carey would carry me down for nothing, and he did it, and that is the reason I went on the observation car instead of the regular car, so that it was not necessary for me to shake dice with myself to know what class I belonged to in the club, as I belong neither to the class with exclusive wealth, or the class of exclusive brains, nor to the class to which our classical friend, Colonel Hecker belongs, for he has both. I belong to the same class as our claim agent, Walter Ross, although I have more hair than he has. I belong to the class that is needed. My class, I am sorry to say, has been depreciating, but I am too old to reclaim it—I belong to that class necessary in the Yondotega Club, as an object lesson, to exhibit the man that has neither brains nor the faculty of obtaining wealth. I thank you. (Applause.)

TOAST—"THE FUTURE ELECTRIC RAILWAY." RESPONDED
TO BY MR. W. CARYL ELY, OF BUFFALO.

The Toastmaster—Ladies and gentlemen, the last speaker has unfairly taken advantage of a poor workingman. Mr. Hutchins, with the astuteness of our class, has made a memorandum on his cuff to deduct twenty-five cents from Brennan's next bill for that free ride, and to discharge the conductor. (Laughter.)

With regard to the gentleman who is to respond to the next toast, I am at home. They had somewhat the advantage of me, when I introduced the previous speakers, but now I am in my own State. Why the Local Committee has selected that toast for Mr. Ely I cannot understand—"The Future of Electric Railways." I do not understand that he knows anything about the present state of electric railways. Mr. Ely

has responded to the toast, "The Ladies," from time immemorial in this Association; and this is the first time I ever knew him to be called upon to respond to such a toast as this. I always regret that I was not educated as a lawyer when I behold Mr. Ely's success. You all recall the story of the days when large fortunes were accumulated rapidly in the West, of the fellow who went into a hotel and asked the clerk for a room. The clerk roughly told him he had no rooms. The man went out and bought the hotel and came back and discharged the clerk. Mr. Ely was running a little railroad up at Niagara Falls, and in connection with that railway he went to the manager of the system in Buffalo and asked for some consideration, and the gentleman in Buffalo very rudely repulsed Mr. Ely. He walked out and bought the railroad and then came back and discharged the President and General Manager. It was his legal ability, not his practical knowledge of street railway operation, which enabled him to do this; but inasmuch as in New York State no one ever speaks to the toast assigned him, I think Mr. Ely will get along fairly well with this one.

Mr. Toastmaster, Ladies and Gentlemen: Mr. Brennan very truly says that we are all handicapped by the toastmaster. We are indeed; that gentleman seems upon ordinary occasions to be a plain, everyday street railroad man, and then he comes to an occasion like this and suddenly blazes upon our astonished vision like some splendid meteor. Instead of being that which he seems to be, a plain matter of fact, unvarnished man, he is a Cicero, a Socrates and a Demosthenes in disguise. (Applause.) But, Mr. Toastmaster, I am doubly embarrassed at this moment, not only by your shining presence, but by the magnificent rendition of the song by Mr. Jarvis. In the absorption of the moment it has caused me to forget all the things I was about to say, and indeed the speechmaking were well omitted if we could listen to such singing, and from its effect upon this audience, I think I can truly state, Mr. Toastmaster, that gifted as you are with the power of eloquence, you would exchange it all for the power of song.

I have been struck by several extreme manifestations of propriety in the menu card and the arrangement and subjects of the toasts. First comes the magnificent picture of Mayor Maybury landing upon the shores of Detroit in the year 1701, to which, Mr. Toastmaster, you have referred, and then comes the very appropriate heading of the

list of toasts. The first subject on the program is entitled "Remarks by Mr. Vreeland;" followed next by a "Slumber Song." (Laughter.)

Ladies and Gentlemen: I come to you upon the banks of the Detroit from the banks of the Niagara, two rivers famous always in the history of North America. Some little time before Cadillac founded the city of Detroit, that other great French explorer, La Salle, had discovered the Niagara and had built upon its shores at the place which now bears his name the first sailing vessel that navigated the waters of Lake Erie, and for years during the colonial history of this country Niagara and Detroit were the most important posts of England, north and west of Pittsburg. During the memorable five months' siege of Detroit in the year 1763, it was to the Niagara that all eyes turned for relief and succor from the savage hordes of Pontiac, and it was from the Niagara that almost precisely one hundred and thirty nine years ago the detachments of Dalzell and Wilkins proceeded to the relief of the exhausted and half famished garrison of Detroit, commanded by the heroic and valiant Gladwyn, and finally raised the memorable siege and disbursed the host of blood-thirsty besiegers throughout the western wilderness. Niagara and Detroit were among the last posts to be surrendered by the English to the victorious American colonies at the end of the hold-over period after the close of the war of the American Revolution, and both regions were bloody battlegrounds of the war of 1812, and to-day the frail Griffon, the bark of La Salle, is succeeded upon and about both streams by countless vessels bearing within their capacious holds a commerce so mighty that it is one of the most striking facts of the modern civilized world. (Applause.)

During my drive along the banks of the Detroit above the city this afternoon I was much struck by the similarity between that scenery and the shores of the Niagara above Niagara Falls, and when it was related to me that the procuring of the right of way for the electric road had been exceedingly difficult, because of the great love of the French-Canadian farmers for their pleasant farms upon the banks of the stream, there was forcibly brought to my mind an incident connected with procuring the right of way for the power transmission line between Niagara Falls and Buffalo. The farms along the Niagara river in that locality were owned at the time for the most part by Germans, and they too have that love for the soil, which leads them to cling to their lands with great tenacity. After three rights of way had been procured across those farms for as many steam railroads, and the right of way for the electric railroad, of which I was at that time president, there came along to visit the farmers the smooth-tongued right of way agent, who endeavored to persuade the farmers that the granting of the right of way by them for the power transmission line

would be attended by great benefits. Their farms were rather narrow, and the cutting out of so many strips of land had considerably reduced the area thereof, and a sturdy German objected to making the grant for the foregoing reason. The right of way man persisted and dwelt with great stress upon the resulting benefits. The wise old German said "Yah-Yah, I see how it is, but if this thing keeps up, pretty soon you will have all my farm and I will have nothing but benefits." (Applause.)

But I am admonished that my time is drawing to a close. It is now five minutes past one a. m. by my time; five minutes past twelve by your railroad time, and twenty-three minutes to one by Detroit city time. I do not consider this time an appropriate time for occupying much of your time. In this connection let me say that our delegates seem to be much mixed up by the different kinds of time that seem to prevail in your fair city, and I am reminded of the story of the summer visitor at a country farm house, who remarked to the owner of the house that it was very difficult to tell the correct time by the old family clock, to which the host replied, "It is simple enough; when it is ten minutes of three it strikes seven, and then we know it is twenty minutes of nine." (Applause.)

There is an apparent duplication of the subject of toasts upon the list this evening, which has been pointed out. The one assigned Mr. Keena is most appropriate. He being a good Catholic was expected by the committee to know much more about the future state than I would, but I think I can say one thing about the trolley and its future state, which will commend itself to you all. If I should seek to correctly describe to you the garb of our toastmaster when handling an electric car in the future state, it would be necessary for me to portray him wearing upon his hands a pair of asbestos gloves to protect himself from the excessive heat. (Applause.)

Mr. Toastmaster, a long time ago a mighty city at the zenith of its power ruled the world; then all roads led to Rome. *If in the natural course of time the citizens of Detroit shall continue to conduct themselves toward visitors to this city, as you all have done toward us, there will surely come a time when all electric roads of the future will lead to Detroit. (Applause.)

Mr. Toastmaster, we have all greatly enjoyed our stay in this beautiful city of Detroit, and very greatly the abundant courtesy and hospitality which has been accorded to us. We have come and we have been conquered. Speaking for myself, my subjugation has been most complete. I had the very great pleasure to be entertained this afternoon, in company with about three other men, by about two hundred and fifty women. We did not attempt to entertain them, and,

Mr. Toastmaster, I think that it is a testimonial to my powers and my prowess that at this time in the morning, after such an afternoon, I am able to see and hear, but I love to tell the story and speak of it with pride and with pleasure, and I desire to say in closing, that if the question where this convention shall be held another year, shall be left to my vote as a member of the Executive Committee, and it shall be held out as an inducement to me that a year from now I should have the pleasure of another such afternoon, my voice is still for Detroit. (Laughter and applause.)

TOAST—"THE TROLLEY; ITS FUTURE STATE." RESPONDED TO BY MR. JAMES T. KEENA, OF DETROIT.

The Toastmaster—I would respectfully request of the ladies that if that invitation is accepted they will hold their entertainment on some other afternoon than the busy afternoon of the Association.

I am again confronted with the task of introducing a gentleman to whom I was only introduced at the commencement of this dinner. He has been so well introduced by the Mayor and Mr. Brennan, however, that there is very little left for me to say, further than in asking a gentleman to-day what was a good point to use, he said, "Well, Mr. Brennan and Mr. Keena are both lawyers in Detroit. I would rather at any time entrust a case to Mr. Keena's eloquence than to Mr. Brennan's judgment." Mr. Keena will address you on the toast, "The Trolley; Its Future State."

Mr. Brennan—Mr. Toastmaster, I will warrant you it was Keena told you that.

The Toastmaster—Don't interrupt the speaker; you've had your chance.

Mr. Keena—Ladies and Gentlemen, Mr. Toastmaster: As quite apropos to Mr. Brennan's interruption of the toastmaster while introducing me, a friend of Mr. Brennan's said to me that, to substantiate any story, he would rather have Mr. Brennan's imagination than the testimony of a dozen eye-witnesses. (Laughter.)

Now, ladies and gentlemen, if I show any embarrassment in my address this evening, please remember that it is the first time I have ever been permitted to speak in the presence of Mrs. Keena.

There have been several references made this evening to myself and to my size. I cannot help it. What the Lord intended in my

construction I do not know, excepting probably he thought there was no use of making two bites of a cherry; but this has been my observation, Mr. Toastmaster—the nearer you live to nature, the closer you grow to the ground; the less liable you are to come under the influences of the moon; and high elevation makes most people light-headed. Large men intimidate me, and have from the time of my boyhood. They overawed me; they disturbed my ideas of value. Take my friend, George Russel, here, than whom there is no more kindly or tender-hearted gentleman on God's footstool, yet for years when I saw him coming toward me with his magnificent accumulation of physical surplus and undivided profits, I could not get over the impression that I detected in his eye a gastronomic gleam, and that I heard him muttering to himself, fee, fi, fo, fum, I smell the blood of an Irishman; and it was not until I learned that Mr. Russel never ate oyster crabs that I became entirely at rest in his presence, inferring therefrom that all his appetites, like his appointments, were large. (Applause.)

There is this peculiarity about me, that while I am overawed by the presence of large men, the presence of large women has quite a different effect upon me. I may tremble and shake like an Aspen leaf in the presence of large men, but I am just as bold and adjustable as any old leaf in the presence of large women. I never loved a woman yet that wasn't three sizes too large for me. I run *from* large men, and *to* large women. In fact, I have been suspected of three. A lady once said to me that I must have been born with a vaulting ambition. She stood six feet two in her stocking feet, and I would have kissed her again if the chair had not broken under me. (Laughter.)

When I was born, there is a tradition in my family that I had an abnormally large head. My head was a wonder! The neighbors and friends came in and talked *at* it, and went away and talked *about* it. A horoscope and a loving mother said that I would some day be a great man; that I would be a leader among men, a great politician, and possibly the mayor of a great city. An old-fashioned family doctor said it was water on the brain. The doctor was right. The star in my political firmament was lost in the milky way. The doctor said that there was a baby in the next block that was born with more indications of political preferment and prospects than I. He said that the baby's name was Maybury and that he was born with wind on his stomach. Maybury and I were boys together, and ever since that time it has been a good-natured rivalry between wind and water.

Coming out of the East to the West for this occasion to do honor to a man who has won my heart, and that is Mr. Hutchins, I was quite anxious to become acquainted with the gentlemen whom I might

meet this evening, and the first on the list was Mr. Vreeland. I said to Mr. Hutchins, not having met Mr. Vreeland, "What kind of a man is Mr. Vreeland; is he a man my size?" Now, Mr. Hutchins, in all his answers, being saturated with his business, is either allegorical of, or reverential to, that business, and when I asked Mr. Hutchins if Mr. Vreeland looked like me, he said: "Vreeland look like you? Why," he said, "there isn't a thing about Mr. Vreeland that even suggests a spur or a plug line. Mr. Vreeland looks more like a one-track suburban, with a double switch in the middle, ending in a turn-table that is worked by a crank." He said: "Mr. Vreeland is a genius in his way; he has the greatest faculty of any man I ever knew, of not letting you know what he knows." He said: "I have known Mr. Vreeland to talk for two hours, and not give you the slightest impression that he knew anything." I think we have had two or three examples of that peculiar genius to-night.

"Now," he said, "Mr. Keena, I will tell you how he became President of the Metropolitan Road in New York. When they changed from the old horse-car system, the Board of Directors met together, and they said: 'We don't care whether we adopt cable or electric system; whatever the motive power is, if you run the road you must have common, ordinary horse-sense behind it, and Vreeland is the man who has that, and he was elected President.' Why, Mr. Vreeland is so gifted with horse-sense that his friends are too polite to look him in the mouth. No man has ever been able to make him take water. You can lead him to it, but you cannot make him drink, and true to tradition, if he does drink, he takes a horse's-neck. If he has a lump on his leg, he calls it a spavin; if he has a cold, he calls it the heaves, and he complains a good deal because the flies lack discrimination. He made a bet with a man that he couldn't guess his age. The man was a veterinary surgeon, and he guessed it to an hour the moment he opened his mouth. Horse-sense is a hobby with Vreeland, so much so that his friends call it hobby-horse sense." (Applause.)

There was some confusion in these toasts, and I said to one of the committee when I noticed it, "Don't you think you made a mistake in having those two toasts so identical, Mr. Ely having 'The Future of the Electric Railway,' and mine being 'The Trolley; Its Future State'?" He said, "No, we did that on purpose." He said, "Ely is a great wit, and we gave him the live subject. You are supposed to be dead—serious, and you are to treat the matter in a mortuary sense." He says, "It will be a live subject when Ely gets it, but he will kill it; he will talk it to death, and when you get it, it will be a stiff proposition." So I inferred that I was to hold a kind of an inquest on the remains of this subject after treatment by Mr.

Ely, and having talked it over with the jury here present, and considering the fact that his speech did not show the slightest signs of premeditation or intent, we will simply find him guilty of manslaughter.

I went to Mr. Hutchins about this subject, to see just how he would like to have me treat it. He said he had assigned these particular subjects to Mr. Brennan and myself because he knew that we had too much discretion to tell anything we knew, and furthermore, if we told all we knew, it wouldn't make any difference. This happened in Mr. Brennan's office. I was called in there on a matter of consultation—in a railroad matter. Mr. Brennan is attorney for the road, you know. Mr. Brennan has quite a bright mind. It has quite a religious turn to it. It is so religious that I have occasionally known him to make a holy show of himself. His mind is quite luminous; you might call it phosphorescent, because you can get the best results out of it when you take him in a dark room and rub his head. Now let me make a suggestion right here. If you want to get the best out of an Irishman who hasn't any tails to his coat, rub him on the head, and if you don't see stars right off, he is no Irishman. We were in Mr. Brennan's office this day, and Mr. Brennan's mind didn't work. We took him into the dark room—I think they call it a library. Mr. Brennan and I walked in first and Mr. Hutchins stayed behind to hide his pocketbook, and then he came in. We rubbed Mr. Brennan's head and it worked beautifully. Whenever Mr. Hutchins wanted a positive opinion, he rubbed Brennan's head, and when he wanted a negative opinion, he rubbed mine. When he put our heads together, it made a complete circuit. Mr. Hutchins was so satisfied with the results that on the way out Mr. Brennan and I said: "Mr. Hutchins, you better let us run your road for a month or two." He said: "How would you run it?" We replied: "Run it with our heads." "Well," he said, "I don't know but that would be a good way to make a test of the new alternating current system. It would be so full of Irish breaks." Mr. Hutchins was very much excited that day, and when over-excited, I notice he becomes quite religious. On the way out he mentioned several people, not individually, but collectively. He said something about Hell and air brakes, and expressed the wish that they would take their air brakes with them. Now, I think that was very considerate of Mr. Hutchins. I don't know of anything more convenient in Hell than an air brake. He said: "Keena, you are a Catholic?" I admitted that I didn't eat meat on Friday. "Now," he said to me, "I am not altogether familiar with your religion, but you have one more progressive way station than they have in the other religions—that is Purgatory." He said: "What kind of a place is Purgatory; what is the difference

between Purgatory and Hell?" "Why," I said, "Mr. Hutchins, if you die and go to Purgatory, your stay is temporary, but if you die and go to Hell, you have got a life job. To illustrate in another way," I said, "if you had a franchise in Purgatory, it would run along a number of years, and then you would have to have it renewed, but if you had a franchise in Hell, it would be perpetual." He reflected a while and said, "Well, considering the experience I have had in Detroit on the subject of renewing franchises, I think I would rather go to Hell." He said: "That is the only place you really could give three-cent fares and universal transfers. You could save on fuel. You could run it on hot air." He said it would be very attractive for investors, because nobody would object to watered stock; there could be no freeze-out. "Then," he said, "another thing, we could get away from Stedman's royalties. I understand Mr. Stedman has had his copyright allowed in Heaven and applied for one in Purgatory, but I do not think he would go as far as Hell, so the worst of the next world is not without its comforts. If I ever went there to run a road, I think I would take Walter Ross as adjuster of damage claims. I would want Ross, because Ross would know everybody that went there, and then Ross always looks so like the Devil. You see, Ross was in my office in his early days and got acquainted with every one of my clients. He studied law for a time until he was elected judge, and then he didn't need any law. He had a luxurious mop of hair when he left me. He got married shortly afterward. At this point in my conversation with Mr. Hutchins, Mr. Brennan broke in and told a story appropos to my getting the trolley line into the infernal region, about a religious friend of his, who at a quasi-religious meeting was called upon to recite the Apostles' Creed. This gentleman was French and knew very little about English. He was called upon to recite in English. He got as far as "He descended into Hell"—descended into Hell—descended into Hell—and he could go no further. He called upon one of his English friends to finish the prayer. The next day, in talking the subject over, he said: "I hope the good Lord will forgive me for not knowing enough English to get him out of that unfortunate position," and I hope you gentlemen will forgive me for not knowing enough about "The Trolley and Its Future State" to get it out of Hell. (Applause.)

The Toastmaster—Ladies and Gentlemen: Before announcing the closing number by the quartette, I would like to take this opportunity, on behalf of the Association, of thanking our friends of the Detroit United Railway, the municipal authorities, the citizens of Detroit, and the ladies, for the

cordial hospitality and generous welcome they have extended to us during our convention here. (Applause.)

When we came to your city, the doors, as they opened on their hinges, bade us welcome, and as we go away we will catch the refrain saying to us—Now that you know us, come back again. (Applause.)

Mr. Brennan—I move that a vote of thanks be given to our toastmaster for the eloquent and able manner in which he has conducted the exercises to-night. All in favor will say aye. (No nays.)

Mr. Brennan—Three cheers, members of the Association, for our new President. (And they were given.)

The company dispersed.

CONSTITUTION AND BY-LAWS
OF THE
American Street Railway Association.

CONSTITUTION.

NAME.

I. The name of the Association shall be "The American Street Railway Association," and its office shall be at the place where the Secretary resides.

OBJECT.

II. The object of this Association shall be the acquisition of experimental, statistical and scientific knowledge, relating to the construction, equipment and operation of street railways, and the diffusion of this knowledge among the members of this Association, with the view of increasing the accommodation of passengers, improving the service and reducing its cost; the establishment and maintenance of a spirit of fraternity among the members of the Association by social intercourse, and the encouragement of cordial and friendly relations between the roads and the public.

MEMBERS.

III. The members of this Association shall consist of American Street Railway Companies, or lessees, or individual owners of street railways; and each member shall be entitled to one vote by a delegation presenting proper credentials.

AMENDMENT.

IV. This Constitution may be amended by a two-thirds vote of the members present at a regular meeting, after the proposed amendment shall have been submitted, in writing, at the preceding regular meeting and a copy sent to each of the members.

BY-LAWS.

APPLICANTS.

I. Every applicant for membership shall signify the same, in writing, to the Secretary, enclosing the requisite fee, and shall sign the Constitution and By-Laws.

OFFICERS AND EXECUTIVE COMMITTEE.

II. The Officers shall consist of a President, three Vice-Presidents, and five others, who shall constitute the Executive Committee, and 2

Secretary and Treasurer. The Executive Committee shall have the entire charge and management of the affairs of the Association. The Officers and Executive Committee shall be elected by ballot, at each regular meeting of the Association, and shall hold office until their successors shall be elected. The duties of Secretary and Treasurer shall be performed by the same person. The Secretary and Treasurer shall not be a member of the Executive Committee.

DUTIES OF OFFICERS.

III. The officers of the Association shall assume their duties immediately after the close of the meeting at which they are elected; they shall hold meetings at the call of the President, or, in his absence, at the call of the Vice-Presidents, in their order, and make arrangements for carrying out the objects of the Association.

PRESIDENT.

IV. The President, if present, or in his absence, one of the Vice-Presidents, in their order, if present, shall preside at all meetings of the Association and of the Executive Committee.

TREASURER.

V. The duties of the Treasurer shall be to receive and safely keep all moneys of the Association; to keep correct accounts of the same, and pay all bills approved by the President; and he shall make an annual report to be submitted to the Association. He shall give a bond to the President in such sum, and with such sureties, as shall be approved by the Executive Committee.

SECRETARY.

VI. The duties of the Secretary shall be to take minutes of all proceedings of the Association and of the Executive Committee and enter them in proper books for the purpose. He shall conduct the correspondence of the Association, read minutes and notices of all meetings, and also papers and communications, if the authors wish it, and perform whatever duties may be required in the Constitution and By-Laws appertaining to his department. He shall be paid a salary, to be fixed by the Executive Committee.

MEETINGS.

VII. The regular meeting of the Association shall be held at such time between the fifteenth day of September and the fifteenth day of December, in each year, as the Executive Committee may decide to be best suited to the locality in which the meeting is to be held; the time to be decided on and each member of the Association notified of the selection by the first day of March in the year in which the meeting is to be held. Special meetings may be held upon the order of the Executive Committee. Notice of every meeting shall be given by the Secretary, in a circular addressed to each member, at least thirty days before the time of meeting. Fifteen members shall constitute a quorum of any meeting.

ORDER OF BUSINESS. (1.)

VIII. At the regular meeting of the Association the order of business shall be :

1. The reading of the minutes of the last meeting.
2. The address of the President.
3. The report of the Executive Committee on the management of the Association during the previous year.
4. The report of the Treasurer.
5. Reports of Special Committees.
6. The election of Officers.
7. The reading and discussion of papers of which notice has been given to the Secretary, at least thirty days prior to the meeting.
8. General business.

ORDER OF BUSINESS. (2.)

IX. At other general meetings of the Association, the order of business shall be the same, except as to the 3d, 4th and 6th clauses.

NOTICES.

X. The Secretary shall send notices to all members of the Association at least thirty days before each meeting, mentioning the papers to be read and any special business to be brought before the meeting.

EXECUTIVE COMMITTEE.

XI The Executive Committee shall meet one hour before each meeting of the Association; and on other occasions when the President shall deem it necessary, upon such reasonable notice, specifying the business to be attended to, as the Committee shall, by vote, determine.

VOTING.

XII. All votes, except as herein otherwise provided, shall be *viva voce*; and in case of a tie, the presiding officer may vote.

NON-MEMBERS.

XIII. Any member, with the concurrence of the presiding officer, may admit a friend to each meeting of the Association; but such person shall not take any part in the discussion, unless permitted by the meeting.

READING OF PAPERS.

XIV. All papers read at the meetings of the Association must relate to matters connected with the objects of the Association, and must be approved by the Executive Committee before being read, unless notice of the same shall have been previously given to the Secretary, as hereinbefore provided.

PAPERS, DRAWINGS AND MODELS.

XV. All papers, drawings and models submitted to the meeting of the Association shall remain the property of the owners, subject, however, to be retained by the Executive Committee for examination and use, but at the owner's risk.

FEES.

XVI. Members shall pay an admission fee of twenty-five dollars, and annual dues of twenty-five dollars, payable in advance. The Executive Committee shall have no power to expend, for any purpose whatever, an amount exceeding that received, as hereinbefore provided for. It shall be the duty of the members to make such returns to the Secretary as shall be required by the Executive Committee.

ARREARS.

XVII. No member whose annual payment shall be in arrears shall be entitled to vote.

WITHDRAWAL.

XVIII. Any member may retire from membership by giving written notice to that effect to the Secretary, and the payment of all annual dues to that date, but shall remain a member, and liable to the payment of annual dues until such payments are made, except as herein-after provided.

EXPULSION.

XIX. A member may be expelled from the Association by ballot of two-thirds of the members voting at any regular meeting of the Association, upon the written recommendation of the Executive Committee.

RULES OF ORDER.

XX. All rules not provided for in these By-Laws shall be those found in Roberts' Rules of Order.

AMENDMENT.

XXI. All propositions for adding to or altering any of these By-Laws shall be laid before the Executive Committee, which shall bring them before the next regular meeting of the Association, if it shall think fit; and it shall be the duty of the Committee to do so, on the request, in writing, of any five members of the Association.

COPIES OF CONSTITUTION AND BY-LAWS.

XXII. Each member of the Association shall be furnished by the Secretary with a copy of the Constitution and By-Laws of the Association, and also a list of the members.

LIST OF MEMBERS

AND THEIR OFFICERS

NOVEMBER FIRST, 1902.

ARRANGED ALPHABETICALLY ACCORDING TO CITIES.

Akron, O., Northern Ohio Traction Co.

Pres., H. A. Everett; Vice-Pres., Will Christy; Sec., C. F. Moore; Treas., J. R. Nutt; Gen. Man., Charles Currie; Gen. Supt., W. H. Douglass; Elec. Eng., T. W. Shelton.

Albany, N. Y., United Traction Co.

Pres., John W. McNamara; Vice-Pres., Francis N. Mann, Jr.; Sec., Charles G. Cleminshaw; Treas., James McCredie; Aud., George H. Redway; Supts., Edgar S. Fassett, Charles H. Smith; Elec. and Mech. Eng., Herschel A. Benedict; Elec., Stephen O'Hare.

Allentown, Pa., Lehigh Valley Traction Co.

Pres., Robert E. Wright; Vice-Pres., Loftin E. Johnson; Sec. and Treas., C. M. Bates; Aud., John E. Kenny; Gen. Man., Samuel Harris; Supt., Henry C. Barrow; Elec. Supt., Richard R. Nevins; Elec., R. C. Dornblaser.

Alton, Ill., Alton Ry., Gas and Elec. Co.

Pres., Treas. and Gen. Man., Joseph F. Porter; Vice-Pres., O. S. Stowell; Sec., Henry S. Baker; Aud., H. E. Weeks; Supt. Ry. Dept., W. E. Porter; Elec. Supt., H. O. Channon.

Altoona, Pa., Altoona and Logan Valley Elec. Ry. Co.

Pres., Samuel G. DeCoursey; Vice-Pres., H. J. Crowley; Sec. and Treas., Charles L. S. Tingley; Gen. Man., Scott S. Crane; Elec. Supt., John R. Blackhall.

Anderson, Ind., Union Traction Co. of Indiana.

Pres., George F. McCulloch; Vice-Pres., Philip Matter; Sec., James A. Van Osdol; Treas., William C. Sampson; Aud., F. S. Sage; Asst. Gen. Man., A. L. Drum; Asst. Supt., Charles A. Baldwin; Elec. Eng., A. S. Richey; Chief Eng. and Roadmaster, Will H. Bloss.

Asbury Park, N. J., Atlantic Coast Elec. R. R. Co.

Receiver, James Smith, Jr.; Pres., W. E. Benjamin; Vice-Pres., Daniel O. Day; Sec. and Treas., Albert C. Twining; Aud., George B. Cade; Gen. Man., Scott F. Hazelrigg; Elec., Louis Gaw.

Ashtabula, O., Pennsylvania and Ohio Ry. Co.

Pres., Thomas Fricken; Vice-Pres., W. F. Stanley; Sec., Thomas McGovern; Treas., B. W. Baldwin; Supt., T. C. Smith.

Atchison, Kan., Atchison Ry., Light and Power Co.

Pres., J. P. Pomeroy; Vice-Pres., W. P. Waggener; Sec., James M. Chisham; Treas., C. S. Hetherington; Gen. Supt., C. M. Marshall; Elec. Supt., J. F. Roth.

Atlanta, Ga., Georgia Ry. and Elec. Co.

Pres., P. S. Arkwright; Vice-Pres., J. G. Rossman; Vice-Pres. and Gen. Man., D. A. Belden; Sec., T. K. Glenn; Treas., G. W. Brine; Aud., H. Flynn; Supt., H. N. Hurt; Mast. Mech., A. M. Moore; Elec., J. N. Eley.

Augusta, Ga., Augusta Ry. and Elec. Co.

Pres., Daniel B. Dyer; Vice-Pres. and Supt., William E. Moore; Sec., Treas. and Aud., Andrew J. McKnight.

Aurora, Ill., Elgin, Aurora and Southern Traction Co.

Pres., L. J. Wolf; Vice-Pres., Warren Bicknell; Sec. and Treas., H. C. Lang; Aud., W. P. Harvey; Gen. Man., Frank M. Zimmerman; Supt., W. A. Ballou.

Austin, Texas, Austin Elec. Ry. Co.

Pres., Ira H. Evans; Vice-Pres., Franklin H. Watriss; Sec. and Supt., Frank E. Scovill; Treas., Edward P. Wilmont; Mast. Mech., Rudolph Eggeling.

Baltimore, Md., United Rys. and Elec. Co.

Pres., J. M. Hood; Vice-Pres., George R. Webb; Sec. and Treas., H. C. McJilton; Aud., A. E. Stubbs; Gen. Man., William A. House; Gen. Supt., W. C. Ludwig; Elec. Supt., P. O. Keilholtz; Elec., T. A. Cross.

Bay City, Mich., Bay Cities Consolidated Ry. Co.

Pres., M. P. Heraty; Gen. Man., E. S. Dimmock; Supt., William Luxton; Elec., J. J. Thorne.

Binghamton, N. Y., Binghamton R. R. Co.

Pres., G. Tracy Rogers; Vice-Pres., George E. Green; Sec., Joseph M. Johnson; Treas., H. C. Hardie; Gen. Man. and Purch. Agt., J. P. E. Clark; Elec., F. W. Summers.

Birmingham, Ala., Birmingham Ry., Light and Power Co.

Pres., Robert Jemison; Vice-Pres. and Gen. Man., George H. Davis; Sec., J. P. Ross; Treas. and Aud., C. O. Simpson; Man. Ry. Dept., J. B. McClary; Supt. of Traffic, George H. Harris.

Boston, Mass., Boston Elevated Ry. Co.

Pres., William A. Bancroft; Vice-Pres., Charles S. Sergeant; Clerk, John T. Burnett; Treas., William Hooper; Aud., Henry L. Wilson; Supt. of Surface Lines, Julius E. Rugg; Supt. Dept. of Wires and Conduits, Charles H. Hile; Supt. of M. P. and Mach., Charles F. Baker; Supt. of Tracks, Richard F. Hapgood.

Boston, Mass., Boston and Northern St. Ry. Co.

Pres., P. F. Sullivan; Vice-Pres. and Gen. Man., E. C. Foster; Second Vice-Pres., Horace B. Rogers; Sec., Charles Williams; Treas., J. H. Goodspeed; Aud., D. Dana Bartlett; Gen. Supt., H. C. Page; Elec. Eng., Charles F. Bancroft.

Boston, Mass., Boston and Worcester St. Ry. Co.

Pres., W. M. Butler; Vice-Pres., H. Fisher Eldridge; Sec. and Treas., George A. Butman; Purch. Agent, James F. Shaw; Supt., A. C. Ralph; Chief Eng., E. H. Rogers.

Boston, Mass., Old Colony St. Ry. Co.

Pres., P. F. Sullivan; First Vice-Pres., John P. Morse; Second Vice-Pres., Horace B. Rogers; Sec., Charles Williams; Treas., Joseph H. Goodspeed; Aud., D. Dana Bartlett; Gen. Man., E. C. Foster; Gen. Supt., Robert S. Goff; Elec. Supt., Charles F. Bancroft.

Bridgeport, Conn., Connecticut Ry. and Lighting Co.

Pres., A. M. Young; First Vice-Pres., R. A. C. Smith; Second Vice-Pres., George E. Terry; Sec. and Treas., Lewis Lillie; Asst. Sec. and Treas., E. W. Poole; Aud., C. F. Bryant; Man. Dir., Walton Clark; Gen. Man., John E. Sewell; Elec. Supt., W. T. Oviatt.

Bridgeton, N. J., Bridgeton and Millville Traction Co.

Pres., Samuel G. DeCoursey; Vice-Pres., Henry J. Crowley; Sec. and Treas., Charles L. S. Tingley; Gen. Man., B. Frank Hires; Elec. Supt., J. R. Blackhall.

Buffalo, N. Y., International Ry. Co.

Pres., W. Caryl Ely; Vice-Pres., Daniel S. Lamont; Sec. and Treas., Richard E. Rankine; Aud., H. M. Pease; Gen. Man., T. E. Mitten; Supt. of Operation, C. A. Coons; Elec. Eng., C. K. Marshall; Supt. of Construction and Main. of Way, T. W. Wilson; Supt. of Rolling Stock and Buildings, J. Millar; Passenger and Freight Agent, J. F. Stephenson.

Butte, Mont., Butte Elec. Ry. Co.

Pres., William A. Clark; Vice-Pres., F. E. Sargeant; Sec. and Treas., J. C. Kennedy; Gen. Man., Jesse R. Wharton; Supt., Jesse S. Wathey.

Camden, N. J., Camden and Suburban Ry. Co.

Pres., William S. Scull; Vice-Pres. and Gen. Man., Walter E. Harrington; Sec., Samuel T. Corliss; Treas., Heulings Lippincott.

Canton, O., Canton-Akron Ry. Co.

Pres., W. H. Hoover; Vice-Pres., L. E. Myers; Sec., C. Eldridge; Treas., P. L. Saltonstall; Aud., W. Goldthwaite; Gen. Man., George W. Rounds; Gen. Supt., A. W. Rauch.

Charleston, S. C., Charleston Consolidated Ry., Gas and Elec. Co.

Pres., Frank K. Carey; Vice-Pres., Philip H. Gadsden; Sec. and Aud., Pinckney J. Ballaguer; Treas., M. Triest; Man., S. H. Wilson; Supt. Ry. Div., Theodore W. Passailaigue; Elec., Wallace W. Fuller.

Chester, Pa., Chester Traction Co.

Pres., John A. Rigg; Vice-Pres., Henry C. Moore; Sec. and Treas., William S. Bell; Gen. Man., Frank L. Fuller; Gen. Supt., John MacFayden; Asst. Supt., F. A. Dillman.

Chicago, Ill., Calumet Elec. St. Ry. Co.

Pres., John Farson; Sec., Treas. and Aud., E. E. Simmons; Gen. Man., H. M. Sloan.

Chicago, Ill., Chicago City Ry. Co.

Pres., D. G. Hamilton; First Vice-Pres., Joseph Leiter; Second Vice-Pres., George T. Smith; Sec. and Aud., C. N. Duffy; Treas., T. C. Penington; Gen. Man., Robert McCulloch; Asst. Gen. Man., Richard McCulloch; Elec., J. C. Burgess; Mast. Mech., M. O'Brien; Supt. of Tracks and Buildings, H. B. Fleming.

Chicago, Ill., Chicago Consolidated Traction Co.

Pres. and Gen. Man., John M. Roach; Vice-Pres., Edwin S. Hartwell; Sec. and Treas., C. F. Marlow; Aud., F. E. Smith; Gen. Supt., John J. Linden; Elec. Supt., J. Z. Murphy.

Chicago, Ill., Chicago Elec. Traction Co.

Receiver, Charles Henrotin; Pres., J. S. Bache; Aud., John E. Cooke; Gen. Man., A. E. Davies; Elec. Supt., Charles F. Dorington; Elec., William Drake.

Chicago, Ill., Chicago Union Traction Co.

Pres. and Gen. Man., John M. Roach; First Vice-Pres., R. A. C. Smith; Second Vice-Pres., Walter H. Wilson; Sec., Markham B. Orde; Treas., James H. Eckels; Aud., F. E. Smith; Gen. Supt., T. A. Henderson; Elec. Supt., J. Z. Murphy.

Chicago, Ill., Northwestern Elevated R. R. Co.

Pres., Clarence Buckingham; Vice-Pres., Charles Counselman; Sec. and Treas., William V. Griffin; Gen. Supt., Frank Hedley; Supt., Robert B. Stearns; Elec. Supt., August Hanson.

Chicago, Ill., South Chicago City Ry. Co.

Pres., Dwight F. Cameron; Vice-Pres., D. M. Cummings; Sec., Treas. and Purch. Agt., O. S. Gaither; Aud., William R. Gaither; Supt., William Walmsley.

Cincinnati, O., Cincinnati and Eastern Elec. Ry. Co.

Pres. and Gen. Man., George R. Scrugham; Vice-Pres., Lee H. Brooks; Sec. and Treas., John M. Kennedy; Asst. Sec. and Treas., William E. Hutton; Aud., C. J. Williams; Gen. Supt., B. E. Merwin; Elec. Supt., F. H. Talbot.

Cincinnati, O., Cincinnati Traction Co.

Pres. and Gen. Man., W. Kelsey Schoepf; Vice-Pres., J. B. Foraker, Jr.; Sec., S. C. Cooper; Treas., Dana Stevens; Aud., W. H. MacAlister; Supt., John Harris.

Cleveland, O., Cleveland City Ry. Co.

Pres., Mark A. Hanna; Vice-Pres., C. F. Emery; Sec. and Treas., John Ehrhardt; Supt., George G. Mulhern; Elec. Supt., E. J. Cook.

Cleveland, O., Cleveland Elec. Ry. Co.

Pres., Horace E. Andrews; Vice-Pres., R. A. Harmon; Sec., Henry J. Davies; Treas., G. S. Russell; Asst. Treas., F. C. Bangs; Aud., William G. McDole; Gen. Man., J. J. Stanley; Gen. Supt., George L. Radcliffe; Chief Eng., D. F. Carver.

Cleveland, O., Cleveland, Painesville and Eastern R. R. Co.

Pres., Charles W. Wason; Vice-Pres., J. A. Beidler; Sec., Fred S. Borton; Asst. Sec., G. E. Bender; Treas., Charles A. Post; Supt., Joseph Jordan.

Cleveland, O., Eastern Ohio Traction Co.

Pres., H. Clark Ford; Vice-Pres., H. A. Sherwin; Sec. and Treas., E. G. Tillotson; Aud., F. H. Kirkham; Gen. Man., R. L. Andrews; Supts., James O'Hara and J. J. Doyle.

Cleveland, O., Lake Shore Elec. Ry. Co.

Pres., B. Mahler; First Vice-Pres., J. B. Hanna; Second Vice-Pres., W. H. Price; Sec., F. W. Coen; Aud., A. C. Henry; Gen. Supt., F. J. Stout.

Colorado Springs, Colo., Colorado Springs Interurban Ry. Co.

Pres., —————; Sec. and Treas., William Lloyd; Aud., J. Henry; Gen. Supt., D. L. Macaffree.

Columbus, Ga., Columbus R. R. Co.

Pres., George J. Baldwin; Vice-Pres., John F. Flournoy; Sec., Frank U. Garrard; Treas., H. B. Sawyer; Gen. Mans., Stone & Webster; Man., H. S. Reynolds; Gen. Supt., F. E. Reidhead.

Columbus, O., Columbus Ry. Co.

Pres., Robert E. Sheldon; First Vice-Pres., Treas. and Gen. Man., Edward K. Stewart; Second Vice-Pres., Clarence M. Clark; Sec. and Aud., Philander V. Burington; Gen. Supt., Michael S. Hopkins.

Council Bluffs, Ia., Omaha and Council Bluffs Ry. and Bridge Co.

Pres., Nathan W. Wells; Vice-Pres., George F. Wright; Sec., Charles T. Stewart; Treas., J. H. Millard; Gen. Supt., W. B. Tarkington.

Dallas, Tex., Dallas Consolidated Elec. St. Ry. Co.

Pres., P. S. du Pont; Vice-Pres., W. K. du Pont; Sec. and Gen. Man., Edward T. Moore; Treas., John J. Raskob; Aud., C. R. Burton; Elec. Supt., William C. Urie.

Danville, Ill., Danville St. Ry. and Light Co.

Pres., W. B. McKinley; Vice-Pres., George F. Duncan; Sec. and Treas., E. Woodman; Aud., James Johnson; Gen. Man., S. L. Nelson; Gen. Supt., L. E. Fischer; Supt., M. Connor.

Davenport, Ia., Tri-City Ry. Co.

Pres., Edward E. Cook; Vice-Pres., Frederick C. Denkmann; Sec., Treas. and Gen. Man., James F. Lardner; Gen. Supt., John G. Huntoon; Supt., Robert Hill; Elec. Eng., John D. Fish.

Dayton, O., Dayton and Western Traction Co.

Pres., Treas. and Gen. Man., Valentine Winters; Vice-Pres., Charles B. Clegg; Sec., J. H. Winters; Aud., Charles E. Eckert; Supt., Howard Fravel; Elec., William Eby.

Dayton, O., People's Ry. Co.

Pres., John A. McMahon; Vice-Pres., Henry J. Crowley; Sec. and Treas., Charles L. S. Tingle; Acting Gen. Man., Joseph L. Breen; Supt., Nelson Routzahn; Elec. Supt., John R. Blackhall; Elec., A. J. MacFarlane.

De Kalb, Ill., De Kalb-Sycamore Elec. Co.

Pres., W. B. Ullman; Vice-Pres., J. D. Harvey; Sec. and Treas., L. Chaldecott; Gen. Supt., John W. Glidden.

Denison, Tex., Denison and Sherman Ry. Co.

Pres. and Treas., J. P. Crerar; Vice-Pres., John Crerar; Asst. Sec., H. H. Barde; Supt., H. T. Morrison.

Denver, Colo., Denver City Tramway Co.

Pres. William G. Evans; Vice-Pres. and Gen. Man., John A. Beeler; Sec. and Treas., George E. Ross-Lewin; Aud., John B. Hogarth; Gen. Supt., Simeon W. Cantril; Elec., A. M. Ballou.

Des Moines, Ia., Des Moines City Ry. Co.

Pres., J. S. Polk; Sec. and Gen. Supt., A. G. Maish; Treas. and Gen. Man., George B. Hippee.

Detroit, Mich., Detroit United Ry.

Pres., Jere C. Hutchins; Vice-Pres., Arthur Pack; Asst. Sec., A. E. Peters; Treas., George H. Russell; Aud., Irwin Fulterton; Gen. Supt., Albert H. Stanley; Asst. Gen. Supt., Harry Bullen; Supt. of M. P., Thomas Farmer; Asst. Supt. of M. P. and Overhead Dept., E. J. Burdick; Supt. of Tracks, John Kerwin.

Detroit, Mich., Detroit, Ypsilanti, Ann Arbor and Jackson Ry.

Pres., J. D. Hawks; Vice-Pres. and Treas., S. F. Angus; Sec., F. A. Hinchman; Gen. Man., F. E. Merrill; Gen. Supt. S. J. Dill.

Detroit, Mich., Rapid Ry. System.

Pres., Jere C. Hutchins; Vice-Pres. and Gen. Man., F. W. Brooks; Sec., A. E. Peters; Treas., George H. Russell; Aud., H. S. Swift; Gen. Supt., W. O. Wood; Chief Eng., A. C. Marshall; Div. Supts., C. A. Culver and F. C. Hill.

Duluth, Minn., Duluth-Superior Traction Co.

Pres., C. G. Goodrich; Vice-Pres., J. H. Davis; Sec. and Treas., Luther Mendenhall; Aud., S. L. Reichert; Gen. Man., Herbert Warren; Supts., D. C. Moore and Alfred Williams.

East St. Louis, Ill., East St. Louis and Suburban Ry. Co.

Pres., C. M. Clark; Vice-Pres., L. C. Haynes; Sec. and Treas., Edward Abend, Jr.; Aud., Fred. Sunsel; Gen. Supt., J. M. Bramlette; Supt., William H. Guyton; Elec. Supt., R. W. Bailey.

Edgewater, N. J., New Jersey and Hudson River Ry. and Ferry Co.

Pres., A. Merritt Taylor; First Vice-Pres., W. H. Clark; Second Vice-Pres. and Gen. Man., Frank R. Ford; Sec. and Treas., W. N. Barrows; Aud., C. A. Twining; Gen. Supt., F. W. Bacon.

Elmira, N. Y., Elmira Water, Light and R. R. Co.

Pres., Ray Tompkins; Vice-Pres. and Gen. Man., William W. Cole; Sec. and Treas., John M. Diven; Aud., H. M. Beardsley; Supt., Francis G. Maloney; Elec. Supt., H. M. Beugler.

El Paso, Tex., El Paso Elec. Ry. Co.

Pres., Leigh Clark; Vice-Pres. and Man., H. T. Edgar; Treas., H. B. Sawyer; Gen. Mans., Stone & Webster.

Evansville, Ind., Evansville Elec. Ry.

Pres., James O. Parker; Vice-Pres. and Gen. Man., H. D. Moran; Sec., A. Gilehrst; Treas., L. Shipherd; Supt., John Cash; Elec. Supt., A. H. Mann.

Exeter, N. H., Exeter, Hampton and Amesbury St. Ry. Co.

Pres., Warren Brown; Sec., John Templeton; Treas., E. L. Pride; Aud., Charles E. Stanwood; Gen. Man., A. E. McReel; Elec. Supt., J. H. Herlick.

Fishkill-on-Hudson, N. Y., Citizens' R. R., Light and Power Co.

Pres. and Gen. Man., John T. Smith; Vice-Pres., E. L. Tompkins; Sec., Samuel K. Phillips; Treas., W. H. Southard; Supt., C. B. Reynolds; Elec. Supt., W. L. Blakely.

Florence, Colo., Florence Elec. St. Ry. Co.

Pres. and Gen. Man., Thomas Robinson; Vice-Pres. and Treas., Harley A. Cook; Sec., Harry Robinson.

Fond du Lac, Wis., Fond du Lac St. Ry. and Light Co.

Pres. and Gen. Man., T. F. Grover; Sec. and Treas., William E. Cole; Elec. Supt., Harry Hayes.

Ft. Wayne, Ind., Ft. Wayne Traction Co.

Pres., H. P. Eells; Vice-Pres., E. H. Bourne; Sec. and Treas., H. P. McIntosh; Aud., Harry Vordermark; Gen. Man., A. L. Scott; Supt., James W. Tompkins; Elec., M. Kehoe.

Galesburg, Ill., Galesburg Elec. Motor and Power Co.

Pres. and Gen. Man., Fred Seacord; Vice-Pres., Robert Chappell; Sec. and Treas., Loren Stevens; Supt., Charles Munson; Elec., Robert Stanley.

Galveston, Tex., Galveston City Ry. Co.

Pres. and Purch. Agt., R. B. Baer; Vice-Pres., Walter G. Oakman; Sec. and Asst. Treas., A. Drouilhet; Asst. Sec. and Treas., George A. Turnbull; Mast. Mech., Fred. J. Bennett.

Gloucester, N. J., Camden, Gloucester and Woodbury Ry. Co.

Pres., J. Willard Morgan; Vice-Pres., A. R. Kuser; Sec., Forrest Dryden; Treas., Charles G. Clark; Aud., James R. Shurtz; Gen. Man., M. C. Ludlam; Supt., George E. Tracy.

Grand Rapids, Mich., Grand Rapids Ry. Co.

Pres., C. M. Clark; First Vice-Pres., L. J. Rindge; Second Vice-Pres. and Gen. Man., G. S. Johnson; Sec. and Treas., B. S. Hanchett, Jr.; Supt. of Transportation, J. C. Madigan; Supt. of Construction, D. Campbell; Elec. Supt. and Mast. Mech., W. W. Annable; Chief Eng., A. C. Ogilby.

Grand Rapids, Mich., Grand Rapids, Grand Haven and Muskegon Ry. Co.

Pres., James D. Hawks; Vice-Pres., Thomas F. Carroll; Sec., Wallace Franklyn; Treas., Carl M. Vail; Aud. and Purch. Agt., Kirke Lathrop; Supt., J. E. Webster; Pass. and Freight Solicitor, Thomas L. Hackett.

Great Falls, Mont., Great Falls St.¹ Ry. Co.

Receiver, W. D. Dickinson; Pres., A. S. Bigelow; Vice-Pres., H. H. Stevens; Sec. and Treas., W. J. Ladd.

Greensburg, Pa., Pittsburg, McKeesport and Greensburg Ry. Co.

Pres., L. B. Huff; Vice-Pres., E. C. Gibson; Sec., J. F. McCabe; Treas. and Gen. Man., W. D. Chapman.

Hamilton, O., Cincinnati, Dayton and Toledo Traction Co.

Pres., M. J. Mandelbaum; Vice-Pres., Will Christy; Sec., H. C. Lang; Treas., F. T. Pomeroy; Aud., John T. Huntington; Gen. Man., F. J. J. Sloat; Gen. Supt., C. E. Palmer; Elec. Supt., L. M. Sheldon.

Hamilton, Ontario, Hamilton Elec. Light and Cataract Power Co., Ltd.

Pres., J. M. Gibson; Vice-Pres., James Dixon; Sec. and Gen. Man., William C. Hawkins; Treas., John Moodie; Accountant, George D. Fearman; Traction Man., C. K. Green.

Hancock, Mich., Houghton County St. Ry. Co.

Pres., F. J. Bawden; Vice-Pres., W. O. Chapman; Treas., Henry B. Sawyer; Gen. Mans., Stone & Webster; Man., J. H. Oakley.

Harrisburg, Pa., Harrisburg Traction Co.

Pres., Edwin Bailey; Vice-Pres., B. F. Myers; Sec. and Treas., William J. Calder; Supt., Frank B. Musser.

Hartford, Conn., Hartford St. Ry. Co.

Pres., E. S. Goodrich; Vice-Pres., Samuel G. Dunham; Sec. and Treas., Daniel R. Howe; Gen. Man., Norman McD. Crawford; Supt., Frank Caum.

Hazleton, Pa., Lehigh Traction Co.

Pres., C. W. Kline; Vice-Pres., W. H. Lawall; Sec. and Aud., E. S. Doud; Treas., N. C. Yost; Gen. Man., A. Markle; Supt., George W. Thompson; Asst. Supt., James Good; Elec. Eng., C. A. B. Houck.

Hoboken, N. J., Jersey City, Hoboken and Paterson St. Ry. Co.

Pres. and Gen. Man., David Young; Vice-Pres., John F. Shanley; Sec., Frank J. Davis; Treas., George W. Roe; Aud., Schuyler C. Stivers; Gen. Supt., Warren S. Hall; Elec. Supt., William S. Jackson; Mast. Mech., P. J. Connors.

Holland, Mich., Grand Rapids, Holland and Lake Michigan Ry.

Pres., B. S. Hanchett, Jr.; Vice-Pres., L. J. Rindge; Sec., Willard Kingsley; Treas. and Gen. Man., Strathearn Hendrie; Aud., Charles Floyd; Supt., John Busby.

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